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Statement on the risk assessment of maximum residue levels (MRLs) for oxamyl in view of consumer protection

European Food Safety Authority (EFSA)

Abstract

In accordance with Article 43 of Regulation (EC) No 396/2005, the European Commission requested EFSA to perform a risk assessment of the existing maximum residues levels (MRLs) for oxamyl considering the new toxicological reference values. Additionally, if needed to ensure adequate consumer protection, lower limits of quantification (LOQs) than those currently established in the legislation should be proposed. EFSA performed various consumer exposure calculation scenarios, considering the risk assessment values as available for the existing uses of oxamyl and the lowering of LOQs for several plant and animal commodities as suggested by the European Union Reference Laboratories for Pesticide Residues (EURLs). Based on the results of the consumer exposure assessment calculated considering the risk assessment values for crops with authorised oxamyl uses and the existing EU MRLs at the LOQ for remaining commodities (scenario 1), chronic consumer intake concerns were identified for 34 diets. Acute exposure concerns were identified for a wide range of crops, including crops with currently authorised oxamyl uses: bananas, potatoes, melons, cucumbers, carrots, watermelons, tomatoes, courgettes, parsnips, salsifies and aubergines/eggplants. Under exposure calculation scenario 3, which considered lowering of all MRLs to the lowest analytically achievable limits of quantification, EFSA concludes that chronic consumer exposure concerns can still not be excluded. Similarly, acute consumer exposure concerns were identified for 16 commodities, including crops with known authorised uses: potatoes, melons, watermelons and tomatoes, even though for these crops a lower LOQ as proposed by the EURLs were considered. Further refinements of the calculated exposure at the current stage were not possible by EFSA, but EFSA identified a list of commodities for which a lower LOQ than routinely achievable is expected to significantly reduce the consumer exposure and for which a risk management decision is required.

Keywords: oxamyl, consumer risk assessment, acute and chronic risk assessment, limit of quantification

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Declarations of interest: If you wish to access the declaration of interests of any expert contributing to an EFSA scientific assessment, please contact interestmanagement@efsa.europa.eu.

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Background

Oxamyl is a nematicide which was first assessed in 2005 for the inclusion in Annex I of the Council Directive 91/414/EEC[1] (EFSA, 2005). Oxamyl is considered to be approved for use in the EU until 31 January 2023.[2]

On 1 October 2010, EFSA provided a reasoned opinion on the review of the existing maximum residue levels (MRLs) for the active substance oxamyl in compliance with Article 12(2) of Regulation (EC) No 396/2005[3] (MRL review) (EFSA, 2010). This risk assessment was performed using revision 2 of the EFSA Pesticide Residues Intake Model (PRIMo) and the calculated exposures were compared with the toxicological reference values (TRVs) for oxamyl valid at that time, i.e., acceptable daily intake (ADI) of 0.001 mg/kg body weight (bw) per day and acute reference dose (ARfD) of 0.001 mg/kg bw. The MRLs resulting from this review were implemented by Regulation (EU) No 61/2014.[4] The MRLs for potatoes, carrots, parsnips, salsify, Brussels sprouts and sugar beet roots were implemented at the limit of quantification (LOQ) of 0.01 mg/kg. For oranges, mandarins, bananas, tomatoes and cucurbits with edible peel (cucumbers, courgettes, gherkins) tentative MRLs of 0.01 mg/kg (at the LOQ) and for aubergines/eggplants at 0.02 mg/kg were implemented. For the uses of oxamyl on melons, watermelons and sweet peppers/bell peppers, consumer intake concerns could not be excluded and therefore these uses were withdrawn and the MRL was set at the default LOQ of 0.01 mg/kg.

On 6 July 2018, the Codex Alimentarius Commission adopted new Codex maximum residue limits (CXLs) for oxamyl.[5] EFSA provided scientific support by assessing the proposed CXLs (EFSA, 2018b). The CXLs that were found to be safe for European consumers, namely for melons and watermelons, were implemented by Regulation (EU) No 2019/552.[6] For tomatoes, the MRL at the LOQ of 0.01 mg/kg was confirmed by the same Regulation; the use of oxamyl on tomatoes was also evaluated by the JMPR.

On 18 May 2022, in the framework of the procedure on the renewal of the approval of oxamyl under Regulation (EC) No 1107/2009,[7] EFSA in the conclusions on the peer review (EFSA, 2022) proposed to lower by a factor of 10 the TRVs for oxamyl (i.e. ADI of 0.0001 mg/kg bw day and ARfD of 0.0001 mg/kg bw) and identified several areas of critical concern, *inter alia*, that the preliminary consumer dietary risk assessment indicates a large exceedance of the ARfD for all the representative uses. During the EU pesticides peer review, the screening assessment for all MRLs confirmed after the MRL review was also performed, considering the new lowered TRVs for oxamyl. The screening indicated that the LOQs are not sufficiently protective for European consumers, as the calculated theoretical maximum daily intake (TMDI) exceeded the new lowered TRVs (1,240% of the ADI (NL toddler) and a large exceedance of the ARfD for several commodities (top 3: 1,538% potatoes, 1,517% melons, 1,385% pears)).

The EU pesticides peer review also concluded that for the uses assessed in the MRL review, the Article 12 confirmatory data gaps are addressed for a metabolism study with a radioactive marker representative for the use of oxamyl by drip irrigation in fruits and fruiting vegetables and for a study demonstrating storage stability of oxamyl residues in commodities with high acid content. The Article 12 confirmatory data gap for four additional residues trials on oranges and four additional residues trials on mandarins compliant with southern outdoor GAPs for these crops is considered as obsolete as

[1] Council Directive 91/414/EEC of 15 July 1991 concerning the placing of plant protection products on the market. OJ L 230, 19.8.1991, p. 1–32.

[2] Commission Implementing Regulation (EU) 2021/2068 of 25 November 2021 amending Implementing Regulation (EU) No 540/2011 as regards the extension of the approval periods of the active substances benfluralin, dimoxystrobin, fluazinam, flutolanil, mecoprop-P, mepiquat, metiram, oxamyl and pyraclostrobin. OJ L 421, 26.11.2021, p. 25–27.

[3] Regulation (EC) No 396/2005 of the European Parliament and of the Council of 23 February 2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin and amending Council Directive 91/414/EEC. OJ L 70, 16.3.2005, p. 1–16.

[4] Commission Regulation (EU) No 61/2014 of 24 January 2014 amending Annexes II and III to Regulation (EC) No 396/2005 of the European Parliament and of the Council as regards maximum residue levels for cyromazine, fenpropidin, formetanate, oxamyl and tebuconazole in or on certain products. OJ L 22, 25.1.2014, p. 1–32.

[5] Joint FAO/WHO food standards programme Codex Alimentarius Commission. Appendix II. Forty-first Session. Rome, Italy, 2–6 July 2018.

[6] Commission Regulation (EU) No 2019/552 of 4 April 2019 amending Annexes II and III to Regulation (EC) No 396/2005 of the European Parliament and of the Council as regards maximum residue levels for azoxystrobin, bicyclopyrone, chlormequat, cyprodinil, difenoconazole, fenpropimorph, fenpyroximate, fluopyram, fosetyl, isoprothiolane, isopyrazam, oxamyl, prothioconazole, spinetoram, trifloxystrobin and triflumezopyrim in or on certain products. OJ L 96, 5.4.2019, p. 6–49.

[7] Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC. OJ L 309, 24.11.2009, p. 1–50.

the use on citrus is no longer supported (EFSA, 2022). In addition, the consumer dietary risk assessment could not be finalised since the residue definition for risk assessment was set on provisional basis as oxamyl alone, pending the assessment of relevance of metabolites IN-D2708, IN-A2213, IN-QKT34 and IN-N0079 in various crops.

All oxamyl EU MRLs are currently set at the LOQs of 0.01* mg/kg, 0.02* mg/kg (herbs and edible flowers) and 0.05* mg/kg (teas, hops, spices, honey), with the exception of melons and watermelons (0.01 mg/kg), and aubergines/eggplants (0.02 mg/kg). The MRLs for melons and watermelons reflect Codex MRLs implemented in EU legislation while the MRL on aubergines/eggplants reflect a plant protection use authorised in the EU. No import tolerances exist.

The decision on the renewal of approval of oxamyl is expected in 2023. However, considering the significantly lowered TRVs and the acute consumer risks identified in the EFSA conclusions on the peer review resulting from the existing MRLs, the Commission requests EFSA to carry out a risk assessment of the existing MRLs in view of the consumer protection level they provide and to investigate whether the LOQs of 0.01* mg/kg, 0.02* mg/kg (herbs and edible flowers) and 0.05* mg/kg (teas, hops, spices, honey) are protective enough, and, if need be, to propose lower achievable LOQs that ensure adequate consumer protection.

Terms of reference (as provided by the requestor)

EFSA is requested, according to Article 43 of Regulation (EC) No 396/2005:

- to perform a risk assessment of the existing MRLs considering the input values for risk assessment as derived during the MRL review and by the JMPR, the new toxicological reference values, the provisional residue definition for risk assessment (set as oxamyl only) and the newest version of PRIMo.
- if need be, to propose lower LOQs than those currently established in the legislation that ensure adequate consumer protection.

Assessment

EFSA based the assessment on the following documents:

- the conclusion on the peer review of the pesticide risk assessment of the active substance oxamyl (EFSA, 2022);
- the reasoned opinion on the review of the existing MRLs for oxamyl according to Article 12 of Regulation (EC) No 396/2005 (EFSA, 2010);
- the scientific support for preparing an EU position in the 50th Session of the Codex Committee on Pesticide Residues (CCPR) (EFSA, 2018b);
- the Joint FAO/WHO Meeting on Pesticide residues (JMPR) Evaluation report (FAO, 2018);
- the Report of the 50th Session of the Codex Committee on Pesticide Residues (FAO/WHO, 2018);
- information provided upon request to European Commission by the European Union Reference Laboratories for Pesticide Residues (EURLs).

The deadline for delivering a statement according to Article 43 of Regulation (EC) No 396/2005 on the safety of the proposed MRLs for consumers was agreed to be 2 months from receipt of this mandate. EFSA accepted the mandate and included it in the EFSA Register of Questions with the reference number EFSA-Q-2022-00833 and committed to provide the statement by 23 January 2023.

The additional information provided by the EURLs and the exposure calculations using the EFSA Pesticide Residues Intake Model (PRIMo) are considered as supporting documents and, thus, are made publicly available as background documents to this statement.[8] Screenshots of the report sheets of the PRIMo are presented in Appendix C.

1. Toxicological reference values

The toxicological assessment of oxamyl was initially performed by the EU pesticides peer review for the inclusion of the active substance in Annex I of the Council Directive 91/414/EEC (EFSA, 2005). The ADI of 0.001 mg/kg bw per day and an acute reference dose (ARfD) of 0.001 mg/kg bw were derived

[8] Background documents to this reasoned opinion are published on OpenEFSA and are available at the following link: https://open.efsa.europa.eu/study-inventory/EFSA-Q-2022-00833

(EFSA, 2005). These values were confirmed in the EU review report (European Commission, 2011) and implemented by Commission Directive 2006/16/EC[9] on the inclusion of oxamyl as active substance in Annex I of Directive 91/414/EEC.

In the framework of the renewal of the approval of oxamyl, the toxicological reference values (TRVs) were derived from the same key study as selected by EFSA in 2005[10] (i.e. the rat acute oral neurotoxicity study, with a no observed adverse effect level (NOAEL) of 0.1 mg/kg bw based on neurotoxicity findings) (EFSA, 2022). Compared with the TRVs agreed for the first approval (European Commission, 2011), these newly agreed TRVs have been decreased by 10-fold, by adding an extra-factor of 10 to the standard uncertainty factor (UF) of 100. Consequently, the ADI of 0.0001 mg/kg bw per day and an ARfD of 0.0001 mg/kg bw were derived by EFSA in the framework of the EU pesticides peer review for renewal of the approval of oxamyl (EFSA, 2022). These values have not been implemented yet.

The metabolites IN-D2708, IN-A2213, IN-QKT34 (IN-A2213 glucoside conjugate) and IN-N0079 which were present in tomatoes and potatoes (representative uses assessed by the EU peer review on the renewal of the approval) are major rat metabolites, and therefore, the toxicological reference values of the parent compound are applicable to these compounds (EFSA, 2022).

As requested by the present mandate, the consumer exposure assessment for oxamyl will be performed considering the TRVs derived in the renewal of the approval process of oxamyl.

2. Residue definitions

The enforcement residue definition established for plant and animal commodities in Regulation (EC) No 396/2005 comprises the parent compound oxamyl alone. The same enforcement residue definition for plant commodities has been agreed by the EU pesticides peer review on the renewal of the approval of oxamyl (EFSA, 2022). The enforcement residue definition for commodities of animal origin could not be concluded by the EU pesticides peer review on the renewal of the approval pending the submission of residue trials on crops that could be fed to livestock to estimate the livestock dietary burden (EFSA, 2022).

The residue definition for the risk assessment was derived as parent oxamyl by the EU pesticides peer review for the inclusion of the active substance in Annex I of the Council Directive 91/414/EEC (EFSA, 2005). The EU pesticides peer review on the renewal of the approval on the basis of metabolism studies with fruit crops, root crops, leafy crops and pulses/oilseeds concluded that the residue definition for risk assessment in primary and rotational crops can be set as 'oxamyl' on provisional basis, pending the submission of residue trials on tomatoes and potatoes (representative uses considered for the renewal of the approval of oxamyl) analysing residues of metabolites IN-D2708, IN-A2213, IN-QKT34 (IN-A2213 glucoside conjugate) and IN-N0079. In processed commodities, parent oxamyl is unstable and degrades to metabolite IN-A2213. In animal commodities the risk assessment residue definition has not been concluded since, pending the residue data on potatoes and rotational crops, it is not known if the livestock dietary burden triggers the setting of residue definitions for products of animal origin (EFSA, 2022).

The data gaps set by the EU pesticides peer review on the renewal of the approval (EFSA, 2022) have not been addressed so far and the assessment of the impact of these data gaps on the outcome of the consumer exposure is not within the remit of the present assessment.

Noting the terms of reference of the mandate, the residue definition for risk assessment and enforcement in plant and animal commodities applicable for the present consumer risk assessment is 'oxamyl' alone, as set by the EU peer review for the approval of oxamyl (EFSA, 2005) and confirmed by the MRL review (EFSA, 2010).

3. Analytical methods for enforcement

The availability of the analytical enforcement methods for the determination of residues of oxamyl according to the existing enforcement residue definition (i.e., oxamyl alone), was investigated both in the MRL review and in the EU pesticides peer review on the renewal of the approval of the active substance (EFSA, 2010, 2022).

[9] Commission Directive 2005/16/EC of 7 February 2006 amending Council Directive 91/414/EEC to include oxamyl as active substance. OJ L 36, 8.2.2006, p.37-39.

[10] The same study and NOAEL were also selected by EFSA in 2005 for setting of the oxamyl TRVs at 0.001 mg/kg bw day (EFSA, 2005).

The MRL review concluded that suitable analytical methods are available for enforcement of parent oxamyl in commodities with high water content, high acid content and dry commodities at the validated LOQ of 0.01 mg/kg (EFSA, 2010). The availability of analytical enforcement method for the determination of residues in commodities of animal origin was not further investigated due to insignificant livestock exposure to oxamyl residues.

The EU pesticides peer review on the renewal of the approval concluded that oxamyl residues can be monitored in food and feed of plant origin by the quick, easy, cheap, effective and safe (QuEChERS) method using high-performance liquid chromatography with tandem mass spectrometry (HPLC–MS/MS) with a LOQ of 0.01 mg/kg in the four major plant matrices and dried tobacco leaf. The lack of studies on matrix effects and the verification of the extraction efficiency were identified as data gaps (EFSA, 2022). In food of animal origin oxamyl residues can be determined either by a multi-residue QuEChERS method or by a single residue method using HPLC–MS/MS determination with a validated LOQ of 0.01 mg/kg in all animal matrices. Also, for these methods matrix effects were not examined and the extraction efficiency has not been verified (EFSA, 2022).

Noting potential consumer intake concerns related to oxamyl residues at the LOQ, the European Commission requested the EURLs to investigate whether a lower LOQs could be achieved in plant and animal matrices. The EURLs provided information that a lower LOQs could be achieved for the following crops/commodities:

- 0.002 mg/kg in oranges and tomatoes.
- 0.001 mg/kg in commodities of high water and high acid content[11]: citrus fruits (except oranges), pome fruits, stone fruits, berries and small fruits, miscellaneous fruit (except table olives, avocados), root and tuber vegetables, bulb vegetables, fruiting vegetables (except tomatoes), brassica vegetables, leaf vegetables, fresh herbs and edible flowers, legume vegetables, stem vegetables, fungi, sugar plants.
- 0.005 mg/kg in avocados, cereals, meat of mammals[12] and bird's eggs.
- 0.001 mg/kg in cow's milk.

The information provided by the EURLs will be further considered in the consumer exposure assessment.

4. Consumer risk assessment

As a basis for this risk assessment and in accordance with the internationally agreed methodology for pesticide residues (FAO, 2016), EFSA performed a chronic and acute consumer risk assessment for the existing oxamyl MRLs as established in the Regulation (EU) 2019/552, considering the newest version of EFSA PRIMo rev. 3.1 (EFSA, 2018a, 2019).

The existing EU MRLs are set on the basis of the known authorised uses of oxamyl in the EU for bananas, potatoes, carrots, parsnips, salsifies, aubergines/eggplants, cucumbers, gherkins, courgettes, Brussels sprouts and sugar beet (roots), assessed during the MRL review (EFSA, 2010). For melons and watermelons, the existing EU MRL is set on the basis of CXL. The uses on tomatoes were assessed by the MRL review in 2010 (resulting in tentative MRL of 0.01* mg/kg as implemented by Regulation (EU) No 61/2014), the EU pesticides peer review in 2022 (provisional MRL proposal of 0.01* mg/kg) and by the JMPR in 2018 (CXL of 0.01* mg/kg confirmed by Regulation (EU) 2019/552) resulting in the same MRL proposal at the LOQ of 0.01 mg/kg. For the remaining commodities of plant origin, the existing EU MRLs for oxamyl are set at the LOQs of 0.01, 0.02 and 0.05 mg/kg (depending on the matrices). For commodities of animal origin, the existing EU MRLs are set at the LOQ of 0.01 mg/kg.

4.1. Scenario with available risk assessment values (scenario 1)

4.1.1. Input values

The consumer exposure was calculated for the existing oxamyl EU MRLs as established in the Regulation (EU) 2019/552. For those crops on which known oxamyl uses exist, the risk assessment values, namely the median residue values (STMR) for the chronic exposure and the highest residue

[11] The EURLs assume that lower levels of 0.001 mg/kg can be successfully validated in matrices with high water and high acid content, however, experiments are pending.

[12] For other commodities of animal origin the EURLs confirm that there are no experimental data to support lower LOQs.

values (HR) for the acute exposure, as derived by the MRL review (EFSA, 2010) or by the JMPR (FAO, 2018) were used to refine the exposure assessments. For melons and watermelons, the input values for residues in pulp were available. For the remaining commodities of plant and animal origin the existing EU MRLs (set at LOQ) were used as input values.

All input values considered in the risk assessment scenario 1 are reported in Appendix A.1.

4.1.2. Results

The chronic consumer exposure exceeded the ADI for a total of 34 diets, with the highest exposure being **1,219% of the ADI** as calculated for NL toddler diet. The main contributing commodities (in % of the ADI) were cattle milk (from 30% in UK adult diet to 597% in NL toddler diet), coffee beans (278%, FI adult diet), apples (125%, DE child diet), sugar beet roots (84.4% NL child diet), wheat (72% GEMS/Food G06), maize/corn (70%, NL toddler diet), rye (55% rye, DK child diet) and was individually below 50% of the ADI for other commodities.

The contribution of residues (in % of the ADI) in the crops with known oxamyl authorised uses was the highest for sugar beet root (84.4% NL child diet), bananas (53.7% NL toddler diet), tomatoes (35.8% GEMS/Food G06 diet), potatoes (26.7% PT general diet) and was below 20% of the ADI for other crops (for details see Appendix B).

The contribution of MRLs set at the LOQ was 1,068% in the NL toddler diet.

When only crops with known authorised uses are considered (disregarding MRLs at the LOQ for remaining commodities of plant and animal origin), the chronic consumer intake concerns are identified for two diets with the maximum calculated exposure of 151% of the ADI for NL toddler diet and 134% of the ADI for NL child diet. When only crops with MRLs above the LOQ of 0.01 mg/kg are considered (i.e., watermelons, melons and aubergines/eggplants) the chronic exposure amounts to 11% of the ADI (GEMS/Food G08 diet).

Acute consumer intake concerns could not be excluded for 82 commodities (the crops with known authorised uses are reported in bold):

- with acute exposure above 1,000% of the ARfD: pears, oranges, cattle milk, apples, pineapples.
- with acute exposure between 500% and 1,000% of the ARfD: **bananas** (971%), peaches, mangoes, grapefruits, **potatoes** (769%), **melons** (758%), table grapes, **cucumbers** (656%), **carrots** 634%), kiwi fruits, **watermelons** (611%), sweet peppers/bell peppers, mandarins, leeks, **tomatoes** (581%), cauliflowers, beetroots, celeriacs/turnip rooted, granate apples/pomegranates, kohlrabies, swedes/rutabagas, avocados.
- with acute exposure between 100% and 500% of the ARfD: kaki/Japanese persimmons, **courgettes** (465%), head cabbages, kales, sweet corn, papayas, plums, broccoli, escaroles/ broad-leaved, witloofs/Belgian endives, carobs/Sain John's bread, carambolas, lettuces, celeries, rhubarbs, **parsnips** (361%), turnips, apricots, lemons, Chinese cabbages-pe-tsai, yams, **salsifies** (310%), pumpkins, **aubergines/eggplants** (250%), quinces, radishes, goat milk, onions, spinaches, prickly pears/cactus fruits, guavas, limes, asparagus, beans, honey and other apiculture products, globe artichokes, poultry muscle/meat, cultivated fungi, strawberries, Florence fennels, cocoa beans, spring onions/green onions, chards/beet leaves, cherimoyas, wheat, coconuts, medlar, rice, chicken eggs, cherries (sweet), swine muscle/meat, litchis/lychees, figs, beans (with pods), blackberries.

From the crops on which the authorised uses of oxamyl exist in Europe, no acute intake concerns were identified only for Brussels sprouts (84% of the ARfD) and gherkins (28% of the ARfD). For sugar beet root the acute exposure is not calculated as no consumption data are available.

The detailed results of the calculations are presented in Appendix B.

4.2. Scenario with lower limits of analytical quantification, except crops with known authorised uses (scenario 2)

4.2.1. Input values

Under this scenario, further attempts were made to refine the exposure calculated under scenario 1. For those crops/commodities for which the EURLs confirmed that lower LOQs could be achieved (see Section 3), the lower LOQ values were used in the exposure calculation. For the crops with known

existing authorised uses, the input values were the same as in scenario 1, except for sugar beet root where the input value was a lower LOQ of 0.001 mg/kg considering the unlikely concentration of residues in sugar.

All input values considered in the risk assessment scenario 2 are reported in Appendix A.1.

4.2.2. Results

The chronic exposure calculated under scenario 2 indicated intake concerns for 22 diets, with the highest exposure of **315% of the ADI** calculated for Finnish adult diet. The main contributing commodities (in % of the ADI) were coffee beans (278%, FI adult diet), cattle milk (60%, NL toddler diet), bananas (54%, NL toddler diet) and was individually below 50% of the ADI for other commodities.

The contribution of residues (in % of the ADI) in the crops on which there exist known oxamyl uses was the same as calculated in the scenario 1, except for sugar beet root where the exposure was reduced to 8.4% of the ADI (NL child diet).

The contribution of MRLs set at the LOQ accounted for 294% of the ADI in the Finnish adult diet.

When only crops with known authorised uses are considered (disregarding MRLs at the LOQ for remaining commodities of plant and animal origin), the chronic consumer intake concerns are identified for NL toddler diet with a maximum calculated exposure of 104% of the ADI.

Acute consumer intake concerns could not be excluded for 23 commodities (the crops with known authorised uses are reported in bold):

- with acute exposure between 500% and 1,000% of the ARfD: **bananas** (971%), **potatoes** (769%), **melons** (758%), **cucumbers** (656%), **carrots** (634%), **watermelons** (611%), **tomatoes** (581%).
- with acute exposure between 100% and 500% of the ARfD: **courgettes** (465%), carobs/ Saint John's bread, **parsnips** (361%), **salsifies** (310%), oranges, avocados, **aubergines/ eggplants** (250%), goat milk, beans, honey and other apiculture, cocoa beans, coconuts, pears, cattle milk, apples, pineapples.

From the crops with known authorised uses of oxamyl, no intake concerns are identified for Brussels sprouts and gherkins. For sugar beet root the acute exposure is not calculated as no consumption data are available.

The detailed results of the calculations are presented in Appendix B.

4.3. Scenario with lowering of all oxamyl MRLs to the existing LOQ or lower LOQ (scenario 3)

4.3.1. Input values

Under this scenario the lowering of all EU MRLs of oxamyl to the lowest analytically achievable LOQs and the impact on the consumer exposure was investigated. According to the information provided by the EURLs, for several commodities/commodity groups a lower LOQ could be potentially achieved, thus for these commodities the input values were as reported by the EURLs (see Section 3). For the commodities of plant and animal origin for which the EURLs did not provide any indication of lower analytically achievable LOQs, the input values were the MRLs at the LOQs (of 0.01 mg/kg, 0.02 mg/kg or 0.05 mg/kg, depending on the matrix) as established by Regulation (EU) 2019/552.

All input values considered in the risk assessment scenario 3 are reported in Appendix A.1.

4.3.2. Results

The chronic exposure calculated under scenario 3 indicated intake concerns for 15 diets, with the highest exposure of **297% of the ADI** calculated for Finnish adult diet.

The highest contributing commodities (>10% of the ADI) were coffee beans (278%, FI adult diet), cattle milk (60%, NL toddler diet and 39% UK infant diet), soyabeans (37%, GEMS/Food G11 diet), wheat (36%, GEMS/Food G06 diet), maize/corn (35%, NL toddler diet), rye (27.5%, DK child diet), cocoa beans (26%, ES child diet), bovine muscle/meat (22%, SE general population diet), apples (12%, DE child diet) and swine muscle/meat (11%, DK child diet).

All calculated exposure is attributed to residues at the LOQ.

Acute consumer intake concerns (in % of the ARfD) could not be excluded for 16 commodities (the crops with known authorised uses are reported in bold): carobs (393%), oranges (265%), avocados (252%), goat milk (242%), beans (183%), honey (179%), cocoa beans (161%), **potatoes** (154%), **melons** (152%), sheep milk (151%), coconuts (144%), pears (138%), cattle milk (124%), **watermelons** (1225), **tomatoes** (116%), apples (108%) and pineapples (101%).

The detailed results of the calculations are presented in Appendix B.

Based on scenario 3, EFSA identified a list of commodities for which a lower LOQ is expected to significantly reduce the consumer exposure.

5. Uncertainties related to exposure calculations

The different consumer exposure calculations are affected by the following uncertainties:

- the conclusions of the EU pesticides peer review on the renewal of the approval have not been taken into consideration in this assessment (scenarios 1, 2 and 3);
- no information is available on national authorizations of oxamyl in EU on commodities other than those assessed by the MRL review in 2010 (scenarios 1 and 2);
- the LOQ of 0.001 mg/kg applied for commodities of plant origin with high water and high acid content is provisional and further validation data would be needed to confirm this LOQ (scenarios 2 and 3);
- none of the LOQs proposed by the EURLs have been validated according to the requirements for the post-registration methods as currently applicable by EU Guidance document SANTE/2020/12830 (scenarios 2 and 3).

6. Conclusions and recommendations

Based on the results of the consumer exposure assessment calculated considering the risk assessment values for crops with authorised oxamyl uses and the existing EU MRLs at the LOQ for remaining commodities as reported in the Regulation (EU) 2019/552, chronic and acute consumer exposure concerns cannot be excluded.

When all oxamyl MRLs are lowered to the routinely achievable LOQ or to a lower LOQ as reported by the European Reference Laboratories, the chronic consumer exposure is lower, but intake concerns remain. Acute intake concerns can also not be excluded with those lower LOQs for a range of commodities, including several crops with known authorised uses of oxamyl: potatoes, melons, watermelons and tomatoes. Furthermore, the exposure assessment is affected by uncertainties related to insufficient validation data package for these lower LOQs in several plant and animal matrices.

Thus, it was not possible for EFSA at the current stage to identify a safe consumer exposure scenario. However, EFSA identified a list of commodities for which a lower LOQ than routinely achievable is expected to significantly reduce the consumer exposure and for which risk management decision is required.

The recommendations of EFSA are compiled in the table below (Table 1).

Table 1: Summary table

Code[(a)]	Commodity[(b)]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
Enforcement residue definition (EU): Oxamyl Enforcement residue definition (JMPR): Oxamyl					
0110010	Grapefruits	0.01* (Reg. 2019/552)	Not considered[(d)]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI.

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
0110020	**Oranges**	0.01* (ft 1) (EFSA, 2010)	Not established	Further consideration needed	Chronic and acute (265% ARfD) consumer intake concerns cannot be excluded. An LOQ of 0.002 mg/kg is sufficiently validated, but a lower LOQ would be necessary to ensure sufficient consumer protection, considering the acute intake concern. According to the EU pesticides peer review, the use on citrus fruits is no more authorised in EU (EFSA, 2022). Contribution of residues to the chronic exposure 8% ADI.
0110030	Lemons	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0110040	Limes				
0110050	**Mandarins**	0.01* (ft 1) (EFSA, 2010)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. According to the EU pesticides peer review, the use on citrus fruits is no more authorised in EU. Contribution of residues to the chronic exposure <1% ADI.
0120010	Almonds	0.01* (Reg. 2019/552)	Not considered[d]	0.01*	Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0120020	Brazil nuts				
0120030	Cashew nuts				
0120040	Chestnuts				
0120050	Coconuts			Further consideration needed	Chronic and acute (144%) exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 5% ADI. An LOQ lower than 0.01 mg/kg would be necessary to ensure

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
					sufficient consumer protection, considering the acute intake concern.
0120060	Hazelnuts/cobnuts			0.01*	Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0120070	Macadamia				
0120080	Pecans				
0120090	Pine nut kernels				
0120100	Pistachios				
0120110	Walnuts				
0130010	Apples	0.01* (Reg. 2019/552)	Not considered[d]	Further consideration needed	Chronic and acute (108% ARfD) exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 12% ADI. An LOQ lower than 0.001 mg/kg would be necessary to ensure sufficient consumer protection, considering the acute intake concern.
0130020	Pears			Further consideration needed	Chronic and acute (138% ARfD) exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 4% ADI. An LOQ lower than 0.001 mg/kg would be necessary to ensure sufficient consumer protection, considering the acute intake concern.
0130030	Quinces			0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0130040	Medlars				
0130050	Loquats/Japanese medlars				
0140010	Apricots	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0140020	Cherries (sweet)				
0140030	Peaches				
0140040	Plums				
0151010	Table grapes	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation.

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
					Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 1.5% ADI.
0151020	Wine grapes				Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 2.5% ADI.
0152000	Strawberries	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0153000	Cane fruits				
0153010	Blackberries				
0153020	Dewberries				
0153030	Raspberries (red and yellow)				
0153990	Other cane fruits				
0154000	Other small fruits & berries				
0154010	Blueberries				
0154020	Cranberries				
0154030	Currants (red, black and white)				
0154040	Gooseberries (green, red and yellow)				
0154050	Rose hips				
0154060	Mulberries (black and white)				
0154070	Azarole/ Mediterranean medlar				
0154080	Elderberries				
0161010	Dates	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0161020	Figs				
0161030	Table olives			0.01*	Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI.

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
0161040	Kumquats			0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0161050	Carambolas				
0161060	Kaki/Japanese persimmons				
0161070	Jambuls/jambolans				
0162010	Kiwi fruits (green, red, yellow)				
0162020	Litchis/lychees				
0162030	Passionfruits/ maracujas				
0162040	Prickly pears/cactus fruits				
0162050	Star apples/ cainitos				
0162060	American persimmon/Virginia kaki				
0163010	Avocados	0.01* (Reg. 2019/552)	Not considered[d]	Further consideration needed	Chronic and acute (252% ARfD) consumer intake concerns cannot be excluded. An LOQ of 0.005 mg/kg is sufficiently validated, but a lower LOQ would be necessary to ensure sufficient consumer protection, considering the acute intake concern. Contribution of residues to the chronic exposure <1% ADI
0163020	**Bananas**	0.01* (ft 2) (EFSA, 2010)	Not established	0.001*	Lower LOQ provisional pending further validation. Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 5.4% ADI. A narrow safety margin regarding acute exposure is noted (97% ARfD). According to the EU pesticides peer review, the Article 12 confirmatory data gap has been addressed (EFSA, 2022).
0163030	Mangoes	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded.
0163040	Papayas				
0163050	Granate apples/ pomegranates				
0163060	Cherimoyas				
0163070	Guavas				

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
					Contribution of residues to the chronic exposure individually <1% ADI.
0163080	Pineapples			Further consideration needed	Chronic and acute (101% ARfD) exposure concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI An LOQ lower than 0.001 mg/kg would be necessary to ensure sufficient consumer protection, considering the acute intake concern.
0163090	Breadfruits			0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI
0163100	Durians				
0163110	Soursops/ guanabanas				
0211000	**Potatoes**	0.01* (EFSA, 2010)	0.01* (FAO, 2018)[c]	Further consideration needed	Chronic and acute (154% ARfD) exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 5.3% ADI. An LOQ lower than 0.001 mg/kg would be necessary to ensure sufficient consumer protection, considering the acute intake concern.
0212010	Cassava roots/manioc	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI.
0212020	Sweet potatoes				Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 3.5% ADI.

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
0212030	Yams				Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0212040	Arrowroots				
0213010	Beetroots	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI.
0213020	**Carrots**	0.01* (EFSA, 2010)	0.01* (FAO, 2018)[c]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 1.4% ADI.
0213030	Celeriacs/turnip rooted celeries	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0213040	Horse radishes				
0213050	Jerusalem artichokes				
0213060	**Parsnips**	0.01* (EFSA, 2010)	0.01* (FAO, 2018)[c]		
0213070	Parsley roots/ Hamburg roots parsley	0.01* (Reg. 2019/552)	Not considered[d]		
0213080	Radishes				
0213090	**Salsifies**	0.01* (EFSA, 2010)	Not established		
0213100	Swedes/rutabagas	0.01* (Reg. 2019/552)	Not considered[d]		
0213110	Turnips				
0220010	Garlic	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0220020	Onions				
0220030	Shallots				
0220040	Spring onions/ green onions and Welsh onions				
0231010	**Tomatoes**	0.01* (FAO, 2018)	0.01* (FAO, 2018)[c]	Further consideration needed	Chronic and acute (116% ARfD) consumer intake

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
					concerns cannot be excluded. An LOQ of 0.002 mg/kg is sufficiently validated, but a lower LOQ would be necessary to ensure sufficient consumer protection, considering the acute intake concern. Contribution of residues to the chronic exposure 7% ADI.
0231020	Sweet peppers/bell peppers	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0231030	**Aubergines/egg plants**	0.02 (ft 2) (EFSA, 2010)	0.01* (FAO, 2018)[c]		
0231040	Okra/lady's fingers	0.01* (Reg. 2019/552)	Not considered[d]		
0232010	**Cucumbers**	0.01* (ft 2) (EFSA, 2010)	0.02 (FAO, 2018)[c]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 1.6% ADI. According to the EU pesticides peer review, the Article 12 confirmatory data gap has been addressed (EFSA, 2022).
0232020	**Gherkins**		0.02 (FAO, 2018)[c]		Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI. According to the EU pesticides peer review, the Article 12 confirmatory data gap has been addressed (EFSA, 2022).
0232030	**Courgettes**		0.04 (FAO, 2018)[c]		
0233010	**Melons**	0.01 (FAO, 2018)	0.01 (FAO, 2018)[c]	Further consideration needed	Chronic and acute (152% ARfD) consumer intake concerns cannot be excluded. An LOQ lower than 0.001 mg/kg would be

Code[(a)]	Commodity[(b)]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
					necessary to ensure sufficient consumer protection considering the acute intake concern. Contribution of residues to the chronic exposure <1% ADI.
0233020	Pumpkins	0.01* (Reg. 2019/552)	Not considered[(d)]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI.
0233030	**Watermelons**	0.01 (FAO, 2018)	0.01 (FAO, 2018)[(c)]	Further consideration needed	Chronic and acute (122% ARfD) consumer intake concerns cannot be excluded. An LOQ lower than 0.001 mg/kg would be necessary to ensure sufficient consumer protection considering the acute intake concern. Contribution of residues to the chronic exposure 1% ADI.
0234000	Sweet corn	0.01* (Reg. 2019/552)	Not considered[(d)]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI.
0241010	Broccoli				
0241020	Cauliflowers				
0242010	**Brussels sprouts**	0.01* (EFSA, 2010)	0.01* (FAO, 2018)[(c)]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI.
0242020	Head cabbages	0.01* (Reg. 2019/552)	Not considered[(d)]		Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 1.4% ADI.

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
0243010	Chinese cabbages/ pe-tsai	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0243020	Kales				
0244000	Kohlrabies				
0251010	Lamb's lettuce/corn salads	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0251020	Lettuces				
0251030	Escaroles/broad-leaved endives				
0251040	Cress and other sprouts and shoots				
0251050	Land cress				
0251060	Roman rocket/ rucola				
0251070	Red mustards				
0251080	Baby leaf crops (including brassica species)				
0252010	Spinaches				
0252020	Purslanes				
0252030	Chards/beet leaves				
0252990	Other spinach and similar				
0253000	Grape leaves and similar species				
0254000	Watercress				
0255000	Witloofs/Belgian endives				
0256010	Chervil				
0256020	Chives				
0256030	Celery leaves				
0256040	Parsley				
0256050	Sage				
0256060	Rosemary				
0256070	Thyme				
0256080	Basil and edible flowers				
0256090	Laurel/bay leaves				
0256100	Tarragon				
0260010	Beans (with pods)				
0260020	Beans (without pods)				
0260030	Peas (with pods)				
0260040	Peas (without pods)				
0260050	Lentils (fresh)				

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
0270010	Asparagus				
0270020	Cardoons				
0270030	Celeries				
0270040	Florence fennels				
0270050	Globe artichokes				
0270060	Leeks				
0270070	Rhubarbs				
0270080	Bamboo shoots				
0270090	Palm hearts				
0280000	Fungi				
0280010	Cultivated fungi				
0280020	Wild fungi				
0280990	Mosses and lichens				
0290000	Algae and prokaryotes organisms				
0300010	Beans	0.01* (Reg. 2019/552)	Not considered[d]	Further consideration needed	Chronic and acute (183% ARfD) consumer intake concerns cannot be excluded. An LOQ lower than 0.01 mg/kg would be necessary to ensure sufficient consumer protection, considering the acute intake concern. Contribution of residues to the chronic exposure 7.7% ADI.
0300020	Lentils			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure individually <3% ADI.
0300030	Peas				
0300040	Lupins/lupini beans				
0401010	Linseeds	0.01* (Reg. 2019/552)	Not considered[d]	0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 1.5% ADI.
0401020	Peanuts/groundnuts			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 2.7% ADI.
0401030	Poppy seeds			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI.

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
0401040	Sesame seeds			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI.
0401050	Sunflower seeds			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 6.7% ADI.
0401060	Rapeseeds/canola seeds			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 9.5% ADI.
0401070	Soyabeans			Further consideration needed	Chronic consumer intake concerns cannot be excluded. Considering the high contribution of residues in soybean (37% ADI) to the total exposure, a lowering of the existing LOQ would be required to ensure consumer protection
0401080	Mustard seeds			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI.
0401090	Cotton seeds			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 3% ADI.
0401100	Pumpkin seeds			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0401110	Safflower seeds				
0401120	Borage seeds				
0401130	Gold of pleasure seeds				
0401140	Hemp seeds				
0401150	Castor beans				
0402010	Olives for oil production	0.01* (Reg. 2019/552)	Not considered[d]	0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 8% ADI.
0402020	Oil palm kernels				Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 6% ADI.

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
0402030	Oil palm fruits				Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 7.8% ADI.
0402040	Kapok				Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 2.9% ADI.
0500010	Barley	0.01* (Reg. 2019/552)	Not considered[d]	0.005*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 4.4% ADI. An LOQ of 0.005 mg/kg is sufficiently validated.
0500020	Buckwheat and other pseudo-cereals				Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 1.4% ADI. An LOQ of 0.005 mg/kg is sufficiently validated
0500030	Maize/corn			Further consideration needed	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 35% ADI. An LOQ of 0.005 mg/kg is sufficiently validated, but a lower LOQ would be necessary to ensure sufficient consumer protection, considering the high contribution of residues in maize/corn to the total exposure.
0500040	Common millet/ proso millet			0.005*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI. An LOQ of 0.005 mg/kg is sufficiently validated
0500050	Oat			0.005*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 2.9% ADI. An LOQ of 0.005 mg/kg is sufficiently validated.
0500060	Rice			0.005*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
					exposure 7.8% ADI. An LOQ of 0.005 mg/kg is sufficiently validated.
0500070	Rye			Further consideration needed	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 27.5% ADI. An LOQ of 0.005 mg/kg is sufficiently validated, but a lower LOQ would be necessary to ensure sufficient consumer protection, considering the high contribution of residues in rye to the total exposure.
0500080	Sorghum			0.005*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI. An LOQ of 0.005 mg/kg is sufficiently validated.
0500090	Wheat			Further consideration needed	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 36% ADI. An LOQ of 0.005 mg/kg is sufficiently validated, but a lower LOQ would be necessary to ensure sufficient consumer protection, considering the high contribution of residues in wheat to the total exposure.
0610000	Tea (dried leaves of *Camellia sinensis*)	0.05* (Reg. 2019/552)	Not considered[d]	0.05*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 7% ADI.
0620000	Coffee beans	0.05* (Reg. 2019/552)	Not considered[d]	Further consideration needed	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 278.5% ADI. An LOQ lower than 0.05 mg/kg would be necessary to ensure sufficient consumer protection, considering the high contribution of residues in coffee beans to the chronic exposure.

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
0631010	Chamomille	0.05* (Reg. 2019/552)	Not considered[d]	0.05*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0631020	Hibiscus/roselle				
0631030	Rose				
0631040	Jasmine				
0631050	Lime/linden				
0632000	Herbal infusions (dried leaves)				
0632010	Strawberry leaves				
0632020	Rooibos				
0632030	Mate/maté				
0633010	Valerian root				
0633020	Ginseng root				
0640000	Cocoa beans	0.05* (Reg. 2019/552)	Not considered[d]	Further consideration needed	Chronic and acute (161% ARfD) consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 26% ADI. An LOQ lower than 0.05 mg/kg would be necessary to ensure sufficient consumer protection, considering the acute intake concern and the high contribution of residues in cocoa beans to the chronic exposure.
0650000	Carobs/Saint John's bread	0.05* (Reg. 2019/552)	Not considered[d]	Further consideration needed	Chronic and acute (393% ARfD) consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI. An LOQ lower than 0.05 mg/kg would be necessary to ensure sufficient consumer protection, considering acute exposure concerns.
0700000	HOPS (dried)	0.05* (Reg. 2019/552)	Not considered[d]	0.05*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
0800000	SPICES	0.05* (Reg. 2019/552)	Not considered[d]	0.05*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
					individually <1% ADI, except for vanilla pods (1%) and capers (2.9%).
0900010	**Sugar beet roots**	0.01* (EFSA, 2010)	0.01* (FAO, 2018) [c]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 8.4% ADI.
0900020	Sugar canes	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 1.9% ADI.
0900030	Chicory roots	0.01* (Reg. 2019/552)	Not considered[d]	0.001*	Lower LOQ provisional pending further validation. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI.
1011010	Swine: Muscle/meat	0.01* (Reg. 2019/552)	Not considered[d]	Further consideration needed	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure 11% ADI. An LOQ of 0.005 mg/kg is sufficiently validated, but a lower LOQ would be necessary to ensure sufficient consumer protection, considering the high contribution of residues in swine muscle/ meat to the total exposure.
1011020	Swine: Fat tissue			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure individually below 3% ADI.
1011030	Swine: Liver				
1011040	Swine: Kidney				
1011050	Swine: Edible offals (other than liver and kidney)				
1012010	Bovine: Muscle/ meat	0.01* (Reg. 2019/552)	Not considered[d]	Further consideration needed	Chronic consumer intake concerns cannot be excluded. Contribution of

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
					residues to the chronic exposure 22% ADI. An LOQ of 0.005 mg/kg is sufficiently validated, but a lower LOQ would be necessary to ensure sufficient consumer protection, considering the high contribution of residues in bovine muscle/meat to the total exposure.
1012020	Bovine: Fat tissue			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure individually <2% ADI.
1012030	Bovine: Liver				
1012040	Bovine: Kidney				
1012050	Bovine: Edible offals (other than liver and kidney)				
1013010	Sheep: Muscle/ meat	0.01* (Reg. 2019/552)	Not considered[d]	0.005*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure individually <3% ADI.
1013020	Sheep: Fat tissue			0.01*	
1013030	Sheep: Liver				
1013040	Sheep: Kidney				
1013050	Sheep: Edible offals (other than liver and kidney)				
1014010	Goat: Muscle/meat	0.01* (Reg. 2019/552)	Not considered[d]	0.005*	Lower LOQ sufficiently validated. Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI.
1014020	Goat: Fat tissue			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI (for several matrices no consumption data available).
1014030	Goat: Liver				
1014040	Goat: Kidney				
1014050	Goat: Edible offals (other than liver and kidney)				
1015010	Equine: Muscle/ meat			0.005*	Lower LOQ sufficiently validated. Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure <1% ADI.
1015020	Equine: Fat tissue			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI (for several matrices
1015030	Equine: Liver				
1015040	Equine: Kidney				
1015050	Equine: Edible offals (other than liver and kidney)				

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
					no consumption data available).
1016010	Poultry: Muscle/ meat	0.01* (Reg. 2019/552)	Not considered[d]	0.005*	Lower LOQ sufficiently validated. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 7% ADI.
1016020	Poultry: Fat tissue			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI.
1016030	Poultry: Liver				
1016040	Poultry: Kidney				
1016050	Poultry: Edible offals (other than liver and kidney)				
1017010	Other farmed animals: Muscle/ meat	0.01* (Reg. 2019/552)	Not considered[d]	0.005*	Lower LOQ sufficiently validated. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 1.3% ADI.
1017020	Other farmed animals: Fat tissue			0.01*	Chronic consumer intake concerns cannot be excluded. Contribution of residues to the chronic exposure individually <1% ADI (for several matrices no consumption data available).
1017030	Other farmed animals: Liver				
1017040	Other farmed animals: Kidney				
1017050	Other farmed animals: Edible offals (other than liver and kidney)				
1020010	Milk: Cattle	0.01* (Reg. 2019/552) 0.01	Not considered[d]	Further consideration needed	Chronic and acute (124%) exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 59.7% ADI An LOQ of 0.001 mg/kg is sufficiently validated, but a lower LOQ would be necessary to ensure sufficient consumer protection, considering the acute intake concern and the high contribution of residues in cattle milk to the chronic exposure.
1020020	Milk: Sheep			Further consideration needed	Chronic and acute (151%) exposure concerns cannot be excluded.

Code[a]	Commodity[b]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
					Contribution of residues to the chronic exposure 2.4% ADI. A lowering of the existing LOQ of 0.01 mg/kg would be necessary to ensure sufficient consumer protection, considering the acute intake concern.
1020030	Milk: Goat			Further consideration needed	Chronic and acute (242%) exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 3.6% ADI. A lowering of the existing LOQ of 0.01 mg/kg would be necessary to ensure sufficient consumer protection, considering the acute intake concern.
1020040	Milk: Horse			0.01*	Chronic exposure concerns cannot be excluded. No consumption data available to estimate contribution of residues to the total chronic exposure.
1030010	Eggs: Chicken	0.01* (Reg. 2019/552)	Not considered[d]	0.005*	Lower LOQ sufficiently validated. Chronic exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 6.7% ADI.
1030020	Eggs: Duck				Lower LOQ sufficiently validated. Chronic exposure concerns cannot be excluded. No consumption data available to estimate contribution of residues to the total chronic exposure.
1030030	Eggs: Goose				
1030040	Eggs: Quail				
1040000	Honey and other apiculture products	0.05* (Reg. 2019/552)	Not considered[d]	Further consideration needed	Chronic and acute (179%) exposure concerns cannot be excluded. Contribution of residues to the chronic exposure 5% ADI.

Code[(a)]	Commodity[(b)]	Existing MRL (mg/kg)/ Source	Exisiting CXL	Outcome of the risk assessment	
				MRL (mg/kg)	Comment
					A lowering of the existing LOQ of 0.05 mg/kg would be necessary to ensure sufficient consumer protection, considering the acute intake concern.

MRL: maximum residue level; CXL: codex maximum residue limit; JMPR: Joint FAO/WHO Meeting on Pesticide Residues; LOQ: limit of quantification; ADI: acceptable daily intake; ARfD: acute reference dose.
*: Indicates that the MRL is set at the limit of quantification.
(a): Commodity code number, as listed in Annex I of Regulation (EC) No 396/2005.
(b): Crops on which authorised uses were reported by the MRL review (EFSA, 2010) or an MRL was implemented on the basis of the CXL, are reported in **bold.**
(c): Based on EU GAP.
(d): Not considered relevant for the present assessment.
(ft 1): The European Food Safety Authority identified some information on storage stability, crop metabolism and residue trials as unavailable. When re-viewing the MRL, the Commission will take into account the information referred to in the first sentence, if it is submitted by 25 January 2016, or, if that information is not submitted by that date, the lack of it.
(ft 2): The European Food Safety Authority identified some information on crop metabolism as unavailable. When re-viewing the MRL, the Commission will take into account the information referred to in the first sentence, if it is submitted by 25 January 2016, or, if that information is not submitted by that date, the lack of it.

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Abbreviations

a.s.	active substance
ADI	acceptable daily intake
ARfD	acute reference dose
bw	body weight
CAC	Codex Alimentarius Commission
CCPR	Codex Committee on Pesticide Residues
CXL	codex maximum residue limit
EMS	evaluating Member State
EURLs	European Union Reference Laboratories for Pesticide Residues (former CRLs)
FAO	Food and Agriculture Organization of the United Nations
GAP	Good Agricultural Practice
HR	highest residue
IEDI	international estimated daily intake
IESTI	international estimated short-term intake
JMPR	Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Expert Group on Pesticide Residues (Joint Meeting on Pesticide Residues)
LOAEL	lowest observed adverse effect level
LOQ	limit of quantification
MRL	maximum residue level
NEDI	national estimated daily intake
NESTI	national estimated short-term intake
NOAEL	no observed adverse effect level
OECD	Organisation for Economic Co-operation and Development
PAFF	Standing Committee on Plants, Animals, Food and Feed
PRIMo	(EFSA) Pesticide Residues Intake Model
RA	risk assessment
RD	residue definition
SANCO	Directorate-General for Health and Consumers
SCPAFF	Standing Committee on Plants, Animals, Food and Feed (formerly: Standing Committee on the Food Chain and Animal Health; SCFCAH)
STMR	supervised trials median residue
WHO	World Health Organization

Appendix A – Input values for the exposure calculations

A.1. Input values consumer risk assessment – Scenario 1

Commodity	Existing/ Proposed MRL (mg/kg)	Source	Chronic risk assessment		Acute risk assessment	
			Input value (mg/kg)	Comment	Input value (mg/kg)	Comment
Risk assessment residue definition: oxamyl						
Bananas	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Potatoes	0.01*	EFSA (2010)	0.005	STMR (EFSA, 2010)	0.005	HR (EFSA, 2010)
Carrots	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Parsnips	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Salsifies	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Tomatoes	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Aubergines/ eggplants	0.02	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Cucumbers, gherkins, courgettes	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Melons, watermelones	0.01	FAO (2018)	0.005	STMR (pulp) (FAO, 2018)	0.005	HR (pulp) (FAO, 2018)
Brussels sprouts	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Sugar beet root	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Other commodities of plant and animal origin	0.01* or 0.02* or 0.05*	EU MRL (Regulation (EU) 2019/ 552)	0.01 or 0.02 or 0.05	EU MRL (Regulation (EU) 2019/552)	0.01 or 0.02 or 0.05	EU MRL (Regulation (EU) 2019/552)

MRL: maximum residue level; STMR: supervised trials median residue in raw agricultural commodity; HR: highest residue in raw agricultural commodity
*: Indicates that the M.RL is set at the limit of quantification.

A.2. Input values consumer risk assessment – Scenario 2

Commodity	Existing/ Proposed MRL (mg/kg)	Source	Chronic risk assessment		Acute risk assessment	
			Input value (mg/kg)	Comment	Input value (mg/kg)	Comment
Risk assessment residue definition: oxamyl						
Bananas	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Potatoes	0.01*	EFSA (2010)	0.005	STMR (EFSA, 2010)	0.005	HR (EFSA, 2010)
Carrots	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Parsnips	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Salsifies	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Tomatoes	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Aubergines/ eggplants	0.02	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Cucumbers, gherkins, courgettes	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)
Melons, watermelones	0.01	FAO (2018)	0.005	STMR (pulp) (FAO, 2018)	0.005	HR (pulp) (FAO, 2018)
Brussels sprouts	0.01*	EFSA (2010)	0.01	STMR (EFSA, 2010)	0.01	HR (EFSA, 2010)

Commodity	Existing/ Proposed MRL (mg/kg)	Source	Chronic risk assessment		Acute risk assessment	
			Input value (mg/kg)	Comment	Input value (mg/kg)	Comment
Citrus fruits (except oranges), pome fruits, stone fruits, berries and small fruits, miscellaneous fruit (except table olives and avocados	0.01*	EU MRL (Regulation (EU) 2019/ 552)	0.001	Lowest analytical validation level (EURLs)	0.001	Lowest analytical validation level (EURLs)
Oranges	0.01*	LOQ	0.002	Lowest analytical validation level (EURLs)	0.002	Lowest analytical validation level (EURLs)
Avocados	0.01*	LOQ	0.005	Lowest analytical validation level (EURLs)	0.005	Lowest analytical validation level (EURLs)
Root and tuber vegetables (except potatoes, carrots, parsnips, salsifies)	0.01*	EU MRL (Regulation (EU) 2019/ 552)	0.001	Lowest analytical validation level (EURLs)	0.001	Lowest analytical validation level (EURLs)
Bulb vegetables	0.01*	EU MRL (Regulation (EU) 2019/ 552)	0.001	Lowest analytical validation level (EURLs)	0.001	Lowest analytical validation level (EURLs)
Fruiting vegetables (except tomatoes, aubergines/ eggplants, cucumbers, gherkins, courgettes, melons and watermelons)	0.01*	EU MRL (Regulation (EU) 2019/ 552)	0.001	Lowest analytical validation level (EURLs)	0.001	Lowest analytical validation level (EURLs)
Brassica vegetables (except Brussesl sprouts) Leaf vegetables, herbs and edible flowers Legume vegetables Stem vegetables, Fungi	0.01*	EU MRL (Regulation (EU) 2019/ 552)	0.001	Lowest analytical validation level (EURLs)	0.001	Lowest analytical validation level (EURLs)
Cereals	0.01*	LOQ	0.005	Lowest analytical validation level (EURLs)	0.005	Lowest analytical validation level (EURLs)
Sugar plants	0.01*	EU MRL (Regulation (EU) 2019/ 552)	0.001[(a)]	Lowest analytical validation level (EURLs)	0.001[(a)]	Lowest analytical validation level (EURLs)
Meat of swine, bovine, sheep, goat, equine, poultry, other farmed terrestrial animals	0.01*	LOQ	0.005	Lowest analytical validation level (EURLs)	0.005	Lowest analytical validation level (EURLs)
Bird's Eggs	0.01*	LOQ	0.005	Lowest analytical validation level (EURLs)	0.005	Lowest analytical validation level (EURLs)

Commodity	Existing/ Proposed MRL (mg/kg)	Source	Chronic risk assessment		Acute risk assessment	
			Input value (mg/kg)	Comment	Input value (mg/kg)	Comment
Cattle milk	0.01*	LOQ	0.001	Lowest analytical validation level (EURLs)	0.001	Lowest analytical validation level (EURLs)
Tree nuts, table olives; Pulses; Oilseeds; Oilfruits	0.01*	EU MRL (Regulation (EU) 2019/ 552)	0.01	LOQ (Regulation (EU) 2019/552)	0.01	LOQ (Regulation (EU) 2019/552)
Tea, coffee, herbal infusions; Hops; Spices	0.05*	EU MRL (Regulation (EU) 2019/ 552)	0.05	LOQ (Regulation (EU) 2019/552)	0.05	LOQ (Regulation (EU) 2019/552)
Fat, liver, kidney, edible offal of swine, bovine, sheep, goat, equine, poultry, other farmed terrestrial animals	0.01*	EU MRL (Regulation (EU) 2019/ 552)	0.01	LOQ (Regulation (EU) 2019/552)	0.01	LOQ (Regulation (EU) 2019/552)
Milk of sheep, goat, horse	0.01*	EU MRL (Regulation (EU) 2019/ 552)	0.01	LOQ (Regulation (EU) 2019/552)	0.01	LOQ (Regulation (EU) 2019/552)
Honey and other apiculture products	0.05*	EU MRL (Regulation (EU) 2019/ 552)	0.05	LOQ (Regulation (EU) 2019/552)	0.05	LOQ (Regulation (EU) 2019/552)

MRL: maximum residue level; STMR: supervised trials median residue in raw agricultural commodity; HR: highest residue in raw agricultural commodity; EURLs: European Union Reference Laboratories for Pesticide Residues; LOQ: limit of quantification.
*: Indicates that the MRL is set at the limit of quantification.
(a): No concentration of residues is expected in sugar and therefore in sugar beet root the input value is the lowest valdiation level of 0.001 mg/kg as reported by EURLs for high water content matrices.

A.3. Input values consumer risk assessment – Scenario 3

Commodity	Chronic risk assessment		Acute risk assessment	
	Input value (mg/kg)	Comment	Input value (mg/kg)	Comment
Risk assessment residue definition: oxamyl				
Citrus fruits (except oranges), pome fruits, stone fruits, berries and small fruits, miscellaneous fruit (except table olives and avocados	0.001	Lowest analytical validation level (EURLs)	0.001	Lowest analytical validation level (EURLs)
Oranges	0.002	Lowest analytical validation level (EURLs)	0.002	Lowest analytical validation level (EURLs)
Avocados	0.005	Lowest analytical validation level (EURLs)	0.005	Lowest analytical validation level (EURLs)
Root and tuber vegetables, Bulb vegetables, Fruiting vegetables (except tomatoes), Brassica vegetables, Leaf vegetables, Herbs and edible flowers	0.001	Lowest analytical validation level (EURLs)	0.001	Lowest analytical validation level (EURLs)

Commodity	Chronic risk assessment		Acute risk assessment	
	Input value (mg/kg)	Comment	Input value (mg/kg)	Comment
Legume vegetables Stem vegetables, Fungi, Sugar plants				
Tomatoes	0.002	Lowest analytical validation level (EURLs)	0.002	Lowest analytical validation level (EURLs)
Cereals	0.005	Lowest analytical validation level (EURLs)	0.005	Lowest analytical validation level (EURLs)
Meat of swine, bovine, sheep, goat, equine, poultry, other farmed terrestrial animals	0.005	Lowest analytical validation level (EURLs)	0.005	Lowest analytical validation level (EURLs)
Bird's Eggs	0.005	Lowest analytical validation level (EURLs)	0.005	Lowest analytical validation level (EURLs)
Cattle milk	0.001	Lowest analytical validation level (EURLs)	0.001	Lowest analytical validation level (EURLs)
Tree nuts, table olives; Pulses; Oilseeds; Oilfruits	0.01	LOQ (Regulation (EU) 2019/552)	0.01	LOQ (Regulation (EU) 2019/552)
Tea, coffee, herbal infusions; Hops; Spices	0.05	LOQ (Regulation (EU) 2019/552)	0.05	LOQ (Regulation (EU) 2019/552)
Fat, liver, kidney, edible offal of swine, bovine, sheep, goat, equine, poultry, other farmed terrestrial animals	0.01	LOQ (Regulation (EU) 2019/552)	0.01	LOQ (Regulation (EU) 2019/552)
Milk of sheep, goat, horse	0.01	LOQ (Regulation (EU) 2019/552)	0.01	LOQ (Regulation (EU) 2019/552)
Honey and other apiculture products	0.05	LOQ (Regulation (EU) 2019/552)	0.05	LOQ (Regulation (EU) 2019/552)

EURLs: European Union Reference Laboratories for Pesticide Residues; LOQ: limit of quantification.

Appendix B – Consumer risk assessment

ARfD	0.0001 mg/kg bw (EFSA, 2022)
Highest IESTI, according to EFSA PRIMo	**Scenario 1** Acute exposure concerns for **82** commodities for children's diets. See details in PRIMo (scenario 1). The exposure from the crops with known existing uses of oxamyl: Bananas: 970.6% of the ARfD Potatoes: 768.8% of the ARfD Melons: 758% of the ARfD Cucumbers: 655.5% of the ARfD Carrots: 634% of the ARfD Watermelons: 611.4% of the ARfD Tomatoes: 581% of the ARfD Courgettes: 464.9% of the ARfD Parsnips:361.3% of the ARfD Salsifies: 310.2% of the ARfD Aubergines/eggplants: 250% of the ARfD Brussels sprouts: 83.9% of the ARfD Gherkins: 28.1% of the ARfD Sugar beet roots: no acute RA calculation **Scenario 2 (with lower enforcement LOQs, except for crops with known authorised uses of oxamyl)** Acute exposure concerns for **23** commodities for children's diets. See details in PRIMo (scenario 2). Crops with known exiting uses of oxamyl: *Children exposure* Bananas: 970.6% of the ARfD Potatoes: 768.8% of the ARfD Melons: 758% of the ARfD Cucumbers: 655.5% of the ARfD Carrots: 634% of the ARfD Watermelons: 611.4% of the ARfD Tomatoes: 581% of the ARfD Courgettes: 464.9% of the ARfD Parsnips:361.3% of the ARfD Salsifies: 310.2% of the ARfD Aubergines/eggplants: 250% of the ARfD Brussels sprouts: 83.9% of the ARfD Gherkins: 28.1% of the ARfD Sugar beet roots: no acute RA calculation

Crops with unknown uses of oxamyl:

Children exposure:
Sweet peppers/bell peppers: 595% of the ARfD
Carobs/Sint John's bread: 393% of the ARfD
Oranges: 265% of the ARfD
Avocados: 252% of the ARfD
Goat milk: 242% of the ARfD
Beans: 183% of the ARfD
Honey and other apiculture: 179% of the ARfD
Cocoa beans: 161% of the ARfD
Coconuts: 144% of the ARfD
Pears: 138% of the ARfD
Cattle milk: 124% of the ARfD
Apples: 108% of the ARfD
Pineapples: 101% of the ARfD

Adult exposure:
Sheep milk: 151% of the ARfD

No acute exposure concerns were identified for remaining commodities.

Scenario 3 (lowering all MRLs to the LOQs)

Acute exposure concerns for **16** commodities for children's diets:

Carobs: 393% of the ARfD
Oranges: 265% of the ARfD
Avocados: 252% of the ARfD
Goat milk: 242% of the ARfD
Beans: 183% of the ARfD
Honey: 179% of the ARfD
Cocoa beans: 161% of the ARfD
Potatoes: 154% of the ARfD
Melons: 152% of the ARfD
Coconuts: 144% of the ARfD
Pears: 138% of the ARfD
Cattle milk: 124% of the ARfD

Watermelons: 122% of the ARfD
Tomatoes: 116% of the ARfD
Apples: 108% of the ARfD
Pineapples: 101% of the ARfD

No acute exposure concerns were identified for remaining commodities.

Assumptions made for the calculations	**Scenario 1** The calculation is based on the highest residue levels in crops with known authorised uses: bananas, potatoes, carrots, parsnips, salsifies, tomatoes, aubergines/eggplants, cucurbits with edible peel, melons, watermelons, Brussels sprouts, sugar beet roots. For melons and watermelons residue data in pulp were used. The risk assessment values were as derived by the MRL review and the JMPR. For the remaining commodities of plant an animal origin the existing EU MRLs at the LOQ according to Regulation (EU) 2019/552 were used as input values. **Scenario 2 (with lower enforcement LOQs, except for crops with known authorised uses of oxamyl)** The calculation is based on the highest residue levels in crops with known authorised uses: bananas, potatoes, carrots, parsnips, salsifies, tomatoes, aubergines/eggplants, cucurbits with edible peel, melons, watermelons, Brussels sprouts. For melons and watermelons residue data in pulp were used. According to the EURLs, lower analytical LOQ could be achievable in certain crops/matrices and therefore the following LOQs were used in the exposure calculation: – 0.002 mg/kg in oranges, – 0.001 mg/kg for remaining crops belonging to high water and high acid content matrices, – 0.005 mg/kg in avocados, cereals, meat and bird's eggs – 0.001 mg/kg in cow's milk. For sugar beet root no concentration of residues in sugar are expected and therefore also for sugar beet root the input value was a lower LOQ of 0.001 mg/kg as achievable in commodities with high water content. For remaining commodities of plant and animal origin the existing EU MRLs at the LOQ were used as input values according to Regulation (EU) 2019/552. **Scenario 3 (lowering all MRLs to the LOQs)** The input values were the lowest analytically achievable LOQs according to Regulation (EU) 2019/552 except for those plant and animal commodities for which a lower LOQ could be potentially achieved, according to the information provided by the EURLs: – 0.002 mg/kg in oranges and tomatoes – 0.001 mg/kg for remaining crops belonging to high water and high acid content matrices: citrus fruits (except oranges), pome fruits, stone fruits, berries and small fruits, miscellaneous fruit (except table olives and avocados), root and tuber vegetables, bulb vegetables, fruiting vegetables (except tomatoes), brassica vegetables, leaf vegetables, herbs and edible flowers, legume vegetables, stem vegetables, fungi, sugar plants – 0.005 mg/kg in avocados, cereals, meat and bird's eggs – 0.001 mg/kg in cow's milk The exposure was calculated using EFSA PRIMo rev. 3.1.

ADI	0.0001 mg/kg bw (EFSA, 2022)
Highest IEDI, according to EFSA PRIMo	**Scenario 1** Chronic consumer exposure concerns identfied for 34 diets included in the EFSA PRIMo: 1,218.6% NL toddler 645.0% NL child 621.3% DE child 593.9% UK infant 550.5% FR toddler 2 3 yr 542.3% FR child 3 15 yr 430.1% UK toddler 395.6% GEMS/Food G11 394.9% DK child 366.3% DE women 14-50 yr 365.1% ES child 363.7% GEMS/Food G07 363.6% GEMS/Food G06 360.4% GEMS/Food G15 357.9% GEMS/Food G08 356.8% DE general 356.6% RO general 353.5% SE general 352.2% GEMS/Food G10 345.1% FI adult 316.6% IE adult 287.2% NL general 283.1% FR infant 214.7% FR adult 200.5% ES adult 181.4% PT general 159.2% IT toddler 157.0% DK adult 153.5% FI 3 yr 146.0% LT adult 139.7% UK vegetarian 130.2% UK adult 122.3% FI 6 yr 117.2% IT adult The contribution of residues in the crops with known authorised uses of oxamyl: Sugar beet roots: 84.4% (NL child) Bananas: 53.7% of the ADI (NL toddler) Tomatoes: 35.8% of the ADI (GEMS/Food G06) Potatoes: 26.7% of the ADI (PT general) Cucumbers: 16.4% of the ADI (DK child) Carrots: 13.7% of the ADI (DK child) Watermelons: 5.6% of the ADI (GEMS/Food G06) Courgettes: 4.5% of the ADI (FR infant) Melons: 4.1% of the ADI (IE adult) Aubergines/egg plants: 3.35% of the ADI (GEMS/Food G06) Brussels sprouts: 2% of the ADI (IE adult) Gherkins: 1.7% of the ADI (SE general) Parsnips: 1.5% of the ADI (IE adult) Salsifies: 0.35% of the ADI (GEMS/Food G06) **Scenario 2 (with lower enforcement LOQs, except for crops with known authorised uses of oxamyl)**

Chronic consumer exposure concerns identfied for 22 diets included in the EFSA PRIMo:

315.5%	FI adult
314.3%	NL toddler
188.1%	DE child
186.2%	GEMS/Food G06
183.1%	NL child
182.8%	GEMS/Food G11
174.2%	GEMS/Food G08
173.3%	GEMS/Food G10
169.9%	GEMS/Food G15
168.5%	GEMS/Food G07
166.4%	FR child 3 15 yr
160.1%	DK child
149.7%	ES child
147.8%	UK infant
142.6%	FR toddler 2 3 yr
134.3%	SE general
132.3%	RO general
123.4%	UK toddler
117.3%	IE adult
116.0%	DE women 14-50 yr
114.3%	DE general
105.9%	NL general

The contribution of residues in the crops with known authorised uses of oxamyl:

Bananas: 53.7% of the ADI (NL toddler)
Tomatoes: 35.8% of the ADI (GEMS/Food G06)
Potatoes: 26.7% of the ADI (PT general)
Cucumbers: 16.4% of the ADI (DK child)
Carrots: 13.7% of the ADI (DK child)
Sugar beet roots: 8.4% (NL child)
Watermelons: 5.6% of the ADI (GEMS/Food G06)
Courgettes: 4.5% of the ADI (FR infant)
Melons: 4.1% of the ADI (IE adult)
Aubergines/egg plants: 3.35% of the ADI (GEMS/Food G06)
Brussels sprouts: 2% of the ADI (IE adult)
Gherkins: 1.7% of the ADI (SE general)
Parsnips: 1.5% of the ADI (IE adult)
Salsifies: 0.35% of the ADI (GEMS/Food G06)

Scenario 3 (lowering all MRLs to the LOQs)

Chronic consumer exposure concerns identfied for 15 diets included in the EFSA PRIMo:

296.6%	FI adult
228.3%	NL toddler
146.4%	GEMS/Food G11
140.1%	NL child
138.5%	GEMS/Food G10
138.0%	FR child 3 15 yr
135.9%	DE child
134.7%	GEMS/Food G08
132.8%	GEMS/Food G07
127.8%	GEMS/Food G15
124.8%	GEMS/Food G06
120.5%	ES child
117.5%	FR toddler 2 3 yr
105.4%	DK child
104.7%	UK infant

Assumptions made for the calculations	**Scenario 1** The calculation is based on the STMR values in crops with known authorised uses: bananas, potatoes, carrots, parsnips, salsifies, tomatoes, aubergines/eggplants, cucurbits with edible peel, melons, watermelons, Brussels sprouts, sugar beet roots. For melons and watermelons residue data in pulp were used. The risk assessment values were as derived by the MRL review and the JMPR. For the remaining commodities of plant an animal origin the existing EU MRLs at the LOQ were used as input values. **Scenario 2 (with lower enforcement LOQs, except for crops with known authorised uses of oxamyl)** The calculation is based on the STMR values in crops with known authorised uses: bananas, potatoes, carrots, parsnips, salsifies, tomatoes, aubergines/eggplants, cucurbits with edible peel, melons, watermelons, Brussels sprouts. For melons and watermelons residue data in pulp were used. According to the EURLs, lower analytical LOQ could be achievable in certain crops/matrices and therefore the following LOQs were used in the exposure calculation: - 0.002 mg/kg in oranges, - 0.001 mg/kg for remaining commodities belonging to high water and high acid content matrices, - 0.005 mg/kg in avocados, cereals, meat and bird's eggs, - 0.001 mg/kg in cow's milk. For sugar beet root no residues in sugar are expected and therefore also for sugar beet root the input value was a lower LOQ of 0.001 mg/kg as achievable in commodities with high water content. For remaining commodities of plant and animal origin the existing EU MRLs at the LOQ were used as input values according to Regulation (EU) 2019/552. **Scenario 3 (lowering all MRLs to the LOQs)** The input values were the lowest analytically achievable LOQs according to Regulation (EU) 2019/552 except for those plant and animal commodities for which a lower LOQ could be potentially achieved, according to the information provided by the EURLs: - 0.002 mg/kg in oranges and tomatoes, - 0.001 mg/kg for remaining crops belonging to high water and high acid content matrices: citrus fruits (except oranges), pome fruits, stone fruits, berries and small fruits, miscellaneous fruit (except table olives and avocados), root and tuber vegetables, bulb vegetables, fruiting vegetables (except tomatoes), brassica vegetables, leaf vegetables, herbs and edible flowers, legume vegetables, stem vegetables, fungi, sugar plants, - 0.005 mg/kg in avocados, cereals, meat and bird's eggs, - 0.001 mg/kg in cow's milk. The exposure was calculated using EFSA PRIMo rev. 3.1.

ARfD: acute reference dose; bw: body weight; IESTI: international estimated short-term intake; PRIMo: (EFSA) Pesticide Residues Intake Model; RA: risk asssessment; MRL: maximum residue level; LOQ: limit of quantification; JMPR: Joint FAO/WHO Meeting on Pesticide Residues; ADI: acceptable daily intake; IEDI: international estimated daily intake; STMR: supervised trials median residue; EURLs: European Union Reference Laboratories for Pesticide Residue.

Appendix C – Pesticide Residue Intake Model (PRIMo)

PRIMo (scenario 1)

European Food Safety Authority

EFSA PRIMo revision 3.1; 2021/01/06

Oxamyl

LOQs (mg/kg) range from: 0.01 to: 0.05

Toxicological reference values

ADI (mg/kg bw per day):	0.0001	ARfD (mg/kg bw):	0.0001
Source of ADI:	EFSA	Source of ARfD:	EFSA
Year of evaluation:	2022	Year of evaluation:	2022

Input values

Details–chronic risk assessment | Supplementary results–chronic risk assessment

Details–acute risk assessment/children | Details–acute risk assessment/adults

Comments:

Normal mode

Chronic risk assessment: JMPR methodology (IEDI/TMDI)

No of diets exceeding the ADI : 32

TMDI/NEDI/IEDI calculation (based on average food consumption)	Calculated exposure (% of ADI)	MS Diet	Expsoure (µg/kg bw per day)	Highest contributor to MS diet (in % of ADI)	Commodity/ group of commodities	2nd contributor to MS diet (in % of ADI)	Commodity/ group of commodities	3rd contributor to MS diet (in % of ADI)	Commodity/ group of commodities	Exposure resulting from MRLs set at the LOQ (in % of ADI)	Exposure resulting from commodities not under assessment (in % of ADI)
	1219%	NL toddler	1.22	597%	Milk: Cattle	108%	Apples	70%	Maize/corn	1068%	151%
	645%	NL child	0.65	244%	Milk: Cattle	84%	Sugar beet roots	58%	Apples	511%	134%
	621%	DE child	0.62	198%	Milk: Cattle	125%	Apples	42%	Wheat	563%	58%
	594%	UK infant	0.59	387%	Milk: Cattle	26%	Wheat	16%	Potatoes	530%	64%
	550%	FR toddler 2 3 yr	0.55	293%	Milk: Cattle	32%	Apples	31%	Wheat	493%	58%
	542%	FR child 3 15 yr	0.54	229%	Milk: Cattle	46%	Wheat	37%	Sugar beet roots	473%	70%
	430%	UK toddler	0.43	207%	Milk: Cattle	39%	Wheat	32%	Sugar beet roots	357%	73%
	396%	GEMS/Food G11	0.40	78%	Milk: Cattle	37%	Soyabeans	36%	Wheat	354%	42%
	395%	DK child	0.39	126%	Milk: Cattle	55%	Rye	44%	Wheat	334%	61%
	366%	DE women 14-50 yr	0.37	124%	Milk: Cattle	46%	Sugar beet roots	26%	Apples	298%	69%
	365%	ES child	0.37	125%	Milk: Cattle	44%	Wheat	26%	Cocoa beans	330%	35%
	364%	GEMS/Food G07	0.36	64%	Milk: Cattle	42%	Wheat	19%	Potatoes	322%	42%
	364%	GEMS/Food G06	0.36	72%	Wheat	36%	Tomatoes	25%	Milk: Cattle	279%	84%
	360%	GEMS/Food G15	0.36	70%	Milk: Cattle	45%	Wheat	18%	Potatoes	316%	45%
	358%	GEMS/Food G08	0.36	56%	Milk: Cattle	41%	Wheat	20%	Soyabeans	313%	45%
	357%	DE general	0.36	123%	Milk: Cattle	42%	Sugar beet roots	24%	Apples	293%	63%
	357%	RO general	0.36	116%	Milk: Cattle	51%	Wheat	19%	Tomatoes	291%	65%
	353%	SE general	0.35	124%	Milk: Cattle	44%	Bovine: Muscle/meat	32%	Wheat	289%	64%
	352%	GEMS/Food G10	0.35	55%	Milk: Cattle	39%	Wheat	33%	Soyabeans	312%	40%
	345%	FI adult	0.35	278%	Coffee beans	7%	Rye	6%	Potatoes	323%	22%
	317%	IE adult	0.32	44%	Milk: Cattle	35%	Sweet potatoes	23%	Wheat	276%	40%
	287%	NL general	0.29	85%	Milk: Cattle	29%	Sugar beet roots	19%	Wheat	235%	53%
	283%	FR infant	0.28	168%	Milk: Cattle	17%	Apples	14%	Sugar beet roots	241%	42%
	215%	FR adult	0.21	45%	Milk: Cattle	23%	Wine grapes	22%	Wheat	192%	22%
	200%	ES adult	0.20	49%	Milk: Cattle	23%	Wheat	13%	Oranges	179%	21%
	181%	PT general	0.18	39%	Wheat	27%	Potatoes	25%	Wine grapes	135%	46%
	159%	IT toddler	0.16	66%	Wheat	15%	Other cereals	14%	Tomatoes	130%	30%
	157%	DK adult	0.16	53%	Milk: Cattle	11%	Wheat	10%	Apples	132%	25%
	153%	FI 3 yr	0.15	24%	Potatoes	13%	Bananas	12%	Wheat	90%	63%
	146%	LT adult	0.15	40%	Milk: Cattle	19%	Apples	16%	Potatoes	117%	29%
	140%	UK vegetarian	0.14	33%	Milk: Cattle	20%	Wheat	9%	Oranges	113%	27%
	130%	UK adult	0.13	30%	Milk: Cattle	17%	Wheat	11%	Wine grapes	107%	24%
	122%	FI 6 yr	0.12	19%	Potatoes	11%	Cocoa beans	10%	Wheat	76%	46%
	117%	IT adult	0.12	41%	Wheat	12%	Tomatoes	8%	Apples	95%	23%
	80%	PL general	0.08	20%	Apples	17%	Potatoes	9%	Tomatoes	48%	32%
	76%	IE child	0.08	36%	Milk: Cattle	12%	Wheat	3%	Apples	69%	8%

Conclusion:
The estimated TMDI/NEDI/IEDI was in the range of 0 % to 1218.6 % of the ADI.
For 32 diet(s) the ADI is exceeded.
DISCLAIMER: Dietary data from the UK were included in PRIMO when the UK was a member of the European Union.

Acute risk assessment/children	Acute risk assessment/adults/general population
Details–acute risk assessment/children	Details–acute risk assessment/adults

The acute risk assessment is based on the ARfD. DISCLAIMER: Dietary data from the UK were included in PRIMO when the UK was a member of the European Union.

The calculation is based on the large portion of the most critical consumer group.

Show results for all crops

Unprocessed commodities

Results for children
No. of commodities for which ARfD/ADI is exceeded (IESTI): 82

IESTI

Highest % of ARfD/ADI	Commodities	MRL/input for RA (mg/kg)	Exposure (µg/kg bw)
1385%	Pears	0.01/0.01	1.4
1326%	Oranges	0.01/0.01	1.3
1242%	Milk: Cattle	0.01/0.01	1.2
1078%	Apples	0.01/0.01	1.1
1012%	Pineapples	0.01/0.01	1.0
971%	Bananas	0.01/0.01	0.97
950%	Peaches	0.01/0.01	0.95
786%	Mangoes	0.01/0.01	0.79
785%	Grapefruits	0.01/0.01	0.79
769%	Potatoes	0.01/0.01	0.77
758%	Melons	0.01/0.01	0.76
729%	Table grapes	0.01/0.01	0.73
656%	Cucumbers	0.01/0.01	0.66
634%	Carrots	0.01/0.01	0.63
622%	Kiwi fruits (green, red,	0.01/0.01	0.62
611%	Watermelons	0.01/0.01	0.61
595%	Sweet peppers/bell peppers	0.01/0.01	0.60
593%	Mandarins	0.01/0.01	0.59
589%	Leeks	0.01/0.01	0.59
581%	Tomatoes	0.01/0.01	0.58
579%	Cauliflowers	0.01/0.01	0.58
571%	Beetroots	0.01/0.01	0.57
553%	Celeriacs/turnip rooted	0.01/0.01	0.55
550%	Granate	0.01/0.01	0.55
520%	Kohlrabies	0.01/0.01	0.52
517%	Swedes/rutabagas	0.01/0.01	0.52
504%	Avocados	0.01/0.01	0.50
466%	Kaki/Japanese persimmons	0.01/0.01	0.47
465%	Courgettes	0.01/0.01	0.46
442%	Head cabbages	0.01/0.01	0.44
440%	Kales	0.01/0.01	0.44
435%	Sweet corn	0.01/0.01	0.43
424%	Papayas	0.01/0.01	0.42
421%	Plums	0.01/0.01	0.42
416%	Broccoli	0.01/0.01	0.42
402%	Escaroles/broad-leaved	0.01/0.01	0.40
397%	Witloofs/Belgian endives	0.01/0.01	0.40
393%	Carobs/Staint John's bread	0.05/0.05	0.39
393%	Carambolas	0.01/0.01	0.39
381%	Lettuces	0.01/0.01	0.38
374%	Celeries	0.01/0.01	0.37
372%	Rhubarbs	0.01/0.01	0.37
361%	Parsnips	0.01/0.01	0.36
359%	Turnips	0.01/0.01	0.36
350%	Apricots	0.01/0.01	0.35
343%	Lemons	0.01/0.01	0.34
321%	Chinese cabbages/pe-tsai	0.01/0.01	0.32
311%	Yams	0.01/0.01	0.31
310%	Salsifies	0.01/0.01	0.31
267%	Pumpkins	0.01/0.01	0.27
250%	Aubergines/egg plants	0.02/0.01	0.25
246%	Quinces	0.01/0.01	0.25
245%	Radishes	0.01/0.01	0.25
242%	Milk: Goat	0.01/0.01	0.24
227%	Onions	0.01/0.01	0.23
226%	Spinaches	0.01/0.01	0.23
223%	Prickly pears/cactus fruits	0.01/0.01	0.22
221%	Guavas	0.01/0.01	0.22

Results for adults
No. of commodities for which ARfD/ADI is exceeded (IESTI): 64

IESTI

Highest % of ARfD/ADI	Commodities	MRL/input for RA (mg/kg)	Exposure (µg/kg bw)
421%	Head cabbages	0.01/0.01	0.42
386%	Milk: Cattle	0.01/0.01	0.39
342%	Swedes/rutabagas	0.01/0.01	0.34
339%	Table grapes	0.01/0.01	0.34
307%	Oranges	0.01/0.01	0.31
305%	Pears	0.01/0.01	0.31
296%	Pineapples	0.01/0.01	0.30
283%	Yams	0.01/0.01	0.28
281%	Apples	0.01/0.01	0.28
278%	Cucumbers	0.01/0.01	0.28
271%	Aubergines/egg plants	0.02/0.01	0.27
259%	Mangoes	0.01/0.01	0.26
253%	Chinese cabbages/pe-tsai	0.01/0.01	0.25
238%	Broccoli	0.01/0.01	0.24
237%	Wine grapes	0.01/0.01	0.24
233%	Courgettes	0.01/0.01	0.23
232%	Cauliflowers	0.01/0.01	0.23
230%	Beetroots	0.01/0.01	0.23
220%	Kaki/Japanese persimmons	0.01/0.01	0.22
212%	Bananas	0.01/0.01	0.21
208%	Sweet potatoes	0.01/0.01	0.21
203%	Watermelons	0.01/0.01	0.20
202%	Escaroles/broad-leaved	0.01/0.01	0.20
197%	Carrots	0.01/0.01	0.20
196%	Melons	0.01/0.01	0.20
193%	Kales	0.01/0.01	0.19
189%	Chards/beet leaves	0.01/0.01	0.19
187%	Peaches	0.01/0.01	0.19
186%	Florence fennels	0.01/0.01	0.19
184%	Witloofs/Belgian endives	0.01/0.01	0.18
184%	Milk: Goat	0.01/0.01	0.18
180%	Mandarins	0.01/0.01	0.18
179%	Grapefruits	0.01/0.01	0.18
178%	Guavas	0.01/0.01	0.18
178%	Plums	0.01/0.01	0.18
177%	Granate	0.01/0.01	0.18
165%	Carambolas	0.01/0.01	0.16
163%	Sweet peppers/bell peppers	0.01/0.01	0.16
160%	Celeries	0.01/0.01	0.16
159%	Sweet corn	0.01/0.01	0.16
159%	Tomatoes	0.01/0.01	0.16
152%	Quinces	0.01/0.01	0.15
151%	Milk: Sheep	0.01/0.01	0.15
150%	Avocados	0.01/0.01	0.15
149%	Potatoes	0.01/0.01	0.15
149%	Onions	0.01/0.01	0.15
147%	Pumpkins	0.01/0.01	0.15
141%	Kohlrabies	0.01/0.01	0.14
141%	Parsnips	0.01/0.01	0.14
139%	Papayas	0.01/0.01	0.14
139%	Kiwi fruits (green, red, yellow)	0.01/0.01	0.14
131%	Leeks	0.01/0.01	0.13
129%	Globe artichokes	0.01/0.01	0.13
121%	Lettuces	0.01/0.01	0.12
119%	Celeriacs/turnip rooted	0.01/0.01	0.12
117%	Poultry: Muscle	0.01/0.01	0.12
112%	Figs	0.01/0.01	0.11
111%	Turnips	0.01/0.01	0.11

201%	Limes	0.01/0.01	0.20
193%	Asparagus	0.01/0.01	0.19
183%	Beans	0.01/0.01	0.18
179%	Honey and other apiculture	0.05/0.05	0.18
176%	Globe artichokes	0.01/0.01	0.18
170%	Poultry: Muscle/meat	0.01/0.01	0.17
169%	Cultivated fungi	0.01/0.01	0.17
163%	Strawberries	0.01/0.01	0.16
162%	Florence fennels	0.01/0.01	0.16
161%	Cocoa beans	0.05/0.05	0.16
157%	Spring onions/green onions	0.01/0.01	0.16
156%	Chards/beet leaves	0.01/0.01	0.16
151%	Cherimoyas	0.01/0.01	0.15
144%	Wheat	0.01/0.01	0.14
144%	Coconuts	0.01/0.01	0.14
138%	Medlar	0.01/0.01	0.14
126%	Rice	0.01/0.01	0.13
124%	Eggs: Chicken	0.01/0.01	0.12
122%	Cherries (sweet)	0.01/0.01	0.12
121%	Swine: Muscle/meat	0.01/0.01	0.12
118%	Litchis/lychees	0.01/0.01	0.12
117%	Figs	0.01/0.01	0.12
114%	Beans (with pods)	0.01/0.01	0.11
107%	Blackberries	0.01/0.01	0.11
93%	Wine grapes	0.01/0.01	0.09
92%	Raspberries (red and yellow)	0.01/0.01	0.09
84%	Brussels sprouts	0.01/0.01	0.08
82%	Peas (without pods)	0.01/0.01	0.08
82%	Peas (with pods)	0.01/0.01	0.08
81%	Bovine: Liver	0.01/0.01	0.08
80%	Cassava roots/manioc	0.01/0.01	0.08
79%	Currants (red, black and	0.01/0.01	0.08
79%	Beans (without pods)	0.01/0.01	0.08
77%	Tea (dried leaves of	0.05/0.05	0.08
73%	Bovine: Edible offals (other	0.01/0.01	0.07
72%	Bovine: Muscle/meat	0.01/0.01	0.07
69%	Other farmed animals:	0.01/0.01	0.07
68%	Passionfruits/maracujas	0.01/0.01	0.07
67%	Maize/corn	0.01/0.01	0.07
67%	Lentils	0.01/0.01	0.07
66%	Peas	0.01/0.01	0.07
63%	Rye	0.01/0.01	0.06
60%	Equine: Muscle/meat	0.01/0.01	0.06
60%	Blueberries	0.01/0.01	0.06
59%	Gooseberries (green, red	0.01/0.01	0.06
58%	Pistachios	0.01/0.01	0.06
58%	Lentils (fresh)	0.01/0.01	0.06
56%	Barley	0.01/0.01	0.06
54%	Sheep: Muscle/meat	0.01/0.01	0.05
53%	Sweet potatoes	0.01/0.01	0.05
50%	Buckwheat and other	0.01/0.01	0.05
45%	Cranberries	0.01/0.01	0.04
45%	Parsley roots/Hamburg roots	0.01/0.01	0.04
42%	Chestnuts	0.01/0.01	0.04
39%	Fennel seed	0.05/0.05	0.04
38%	Bovine: Kidney	0.01/0.01	0.04
36%	Milk: Sheep	0.01/0.01	0.04
35%	Garlic	0.01/0.01	0.04
35%	Coffee beans	0.05/0.05	0.04
34%	Walnuts	0.01/0.01	0.03
34%	Walnuts	0.01/0.01	0.03
33%	Hazelnuts/cobnuts	0.01/0.01	0.03
32%	Sorghum	0.01/0.01	0.03
32%	Sunflower seeds	0.01/0.01	0.03
31%	Dates	0.01/0.01	0.03
31%	Safflower seeds	0.01/0.01	0.03
31%	Vanilla pods	0.05/0.05	0.03
30%	Swine: Edible offals (other	0.01/0.01	0.03
29%	Peanuts/groundnuts	0.01/0.01	0.03
29%	Almonds	0.01/0.01	0.03
28%	Gherkins	0.01/0.01	0.03
28%	Gherkins	0.01/0.01	0.03
28%	Pecans	0.01/0.01	0.03
27%	Roman rocket/rucola	0.01/0.01	0.03
26%	Chervil	0.02/0.02	0.03
25%	Cashew nuts	0.01/0.01	0.03
23%	Soyabeans	0.01/0.01	0.02
22%	Parsley	0.02/0.02	0.02
21%	Bovine: Fat tissue	0.01/0.01	0.02
18%	Wild fungi	0.01/0.01	0.02
18%	Kumquats	0.01/0.01	0.02
18%	Dewberries	0.01/0.01	0.02
109%	Apricots	0.01/0.01	0.11
108%	Cherimoyas	0.01/0.01	0.11
107%	Salsifies	0.01/0.01	0.11
104%	Radishes	0.01/0.01	0.10
104%	Cardoons	0.01/0.01	0.10
103%	Parsley roots/Hamburg roots	0.01/0.01	0.10
100%	Cherries (sweet)	0.01/0.01	0.10
94%	Jerusalem artichokes	0.01/0.01	0.09
93%	Prickly pears/cactus fruits	0.01/0.01	0.09
93%	Strawberries	0.01/0.01	0.09
93%	Rhubarbs	0.01/0.01	0.09
91%	Blueberries	0.01/0.01	0.09
90%	Lemons	0.01/0.01	0.09
86%	Coconuts	0.01/0.01	0.09
85%	Rice	0.01/0.01	0.09
84%	Cocoa beans	0.05/0.05	0.08
84%	Wheat	0.01/0.01	0.08
82%	Blackberries	0.01/0.01	0.08
77%	Beans (with pods)	0.01/0.01	0.08
77%	Asparagus	0.01/0.01	0.08
73%	Horseradishes	0.01/0.01	0.07
70%	Limes	0.01/0.01	0.07
69%	Honey and other apiculture	0.05/0.05	0.07
68%	Medlar	0.01/0.01	0.07
66%	Currants (red, black and	0.01/0.01	0.07
66%	Beans	0.01/0.01	0.07
62%	Lentils	0.01/0.01	0.06
61%	Gherkins	0.01/0.01	0.06
60%	Brussels sprouts	0.01/0.01	0.06
57%	Bovine: Muscle	0.01/0.01	0.06
56%	Other farmed animals:	0.01/0.01	0.06
55%	Soyabeans	0.01/0.01	0.06
54%	Raspberries (red and yellow)	0.01/0.01	0.05
53%	Peas (without pods)	0.01/0.01	0.05
53%	Red mustards	0.01/0.01	0.05
50%	Cultivated fungi	0.01/0.01	0.05
49%	Rye	0.01/0.01	0.05
48%	Swine: Muscle/meat	0.01/0.01	0.05
48%	Barley	0.01/0.01	0.05
48%	Equine: Muscle/meat	0.01/0.01	0.05
47%	Sheep: Muscle/meat	0.01/0.01	0.05
47%	Poultry: Liver	0.01/0.01	0.05
45%	Gooseberries (green, red and	0.01/0.01	0.05
45%	Chestnuts	0.01/0.01	0.05
45%	Spring onions/green onions	0.01/0.01	0.04
44%	Oil palm fruits	0.01/0.01	0.04
43%	Eggs: Chicken	0.01/0.01	0.04
40%	Spinaches	0.01/0.01	0.04
40%	Spinaches	0.01/0.01	0.04
39%	Beans (without pods)	0.01/0.01	0.04
38%	Coffee beans	0.05/0.05	0.04
35%	Buckwheat and other pseudo-	0.01/0.01	0.03
34%	Peas (with pods)	0.01/0.01	0.03
33%	Peas	0.01/0.01	0.03
33%	Bovine: Edible offals (other	0.01/0.01	0.03
33%	Lentils (fresh)	0.01/0.01	0.03
33%	Passionfruits/maracujas	0.01/0.01	0.03
33%	Swine: Other products	0.01/0.01	0.03
30%	Cassava roots/manioc	0.01/0.01	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
28%	Sheep: Liver	0.01/0.01	0.03
27%	Pistachios	0.01/0.01	0.03
27%	Shallots	0.01/0.01	0.03
26%	Swine: Edible offals (other	0.01/0.01	0.03
25%	Tea (dried leaves of Camellia	0.05/0.05	0.03
24%	Parsley	0.02/0.02	0.02
23%	Bamboo shoots	0.01/0.01	0.02
23%	Bamboo shoots	0.01/0.01	0.02
23%	Pecans	0.01/0.01	0.02
22%	Walnuts	0.01/0.01	0.02
22%	Walnuts	0.01/0.01	0.02
22%	Rose hips	0.01/0.01	0.02
22%	Maize/corn	0.01/0.01	0.02
21%	Bovine: Kidney	0.01/0.01	0.02
21%	Macadamia	0.01/0.01	0.02
20%	Swine: Fat tissue	0.01/0.01	0.02

17%	Swine: Fat tissue	0.01/0.01	0.02	20%	Rooibos	0.05/0.05	0.02
17%	Bamboo shoots	0.01/0.01	0.02	20%	Rooibos	0.05/0.05	0.02
17%	Oil palm kernels	0.01/0.01	0.02	20%	Bovine: Other products	0.01/0.01	0.02
16%	Chives	0.02/0.02	0.02	19%	Purslanes	0.01/0.01	0.02
15%	Sage	0.02/0.02	0.02	19%	Lamb's lettuce/corn salads	0.01/0.01	0.02
15%	Sesame seeds	0.01/0.01	0.01	18%	Terrestrial invertebrate	0.01/0.01	0.02
15%	Basil and edible flowers	0.02/0.02	0.01	17%	Dates	0.01/0.01	0.02
15%	Pumpkin seeds	0.01/0.01	0.01	17%	Cashew nuts	0.01/0.01	0.02
14%	Common millet/proso millet	0.01/0.01	0.01	16%	Wild fungi	0.01/0.01	0.02
14%	Rapeseeds/canola seeds	0.01/0.01	0.01	16%	Pumpkin seeds	0.01/0.01	0.02
13%	Capers	0.05/0.05	0.01	16%	Goat: Muscle	0.01/0.01	0.02
13%	Olives for oil production	0.01/0.01	0.01	15%	Hybiscus/roselle	0.05/0.05	0.02
13%	Swine: Kidney	0.01/0.01	0.01	14%	Dewberries	0.01/0.01	0.01
12%	Swine: Liver	0.01/0.01	0.01	14%	Almonds	0.01/0.01	0.01
11%	Oat	0.01/0.01	0.01	14%	Swine: Liver	0.01/0.01	0.01
11%	Poultry: Liver	0.01/0.01	0.01	14%	Eggs: Quail	0.01/0.01	0.01
11%	Linseeds	0.01/0.01	0.01	13%	Poultry: Kidney	0.01/0.01	0.01
10%	Mustard seeds	0.01/0.01	0.01	12%	Hazelnuts/cobnuts	0.01/0.01	0.01
10%	Chamomille	0.05/0.05	0.01	12%	Roman rocket/rucola	0.01/0.01	0.01

Expand/collapse list

Total number of commodities exceeding the ARfD/ADI in children and adult diets (IESTI calculation) #N/A

Processed commodities

Results for children
No of processed commodities for which ARfD/ADI is exceeded (IESTI): 43

IESTI

Highest % of ARfD/ADI	Processed commodities	MRL/input for RA (mg/kg)	Exposure (µg/kg bw)
1102%	Sugar beets (root)/sugar	0.01/0.12	1.1
887%	Pumpkins/boiled	0.01/0.01	0.89
887%	Witloofs/boiled	0.01/0.01	0.89
788%	Broccoli/boiled	0.01/0.01	0.79
696%	Cauliflowers/boiled	0.01/0.01	0.70
663%	Escaroles/broad-leaved endiv	0.01/0.01	0.66
573%	Leeks/boiled	0.01/0.01	0.57
541%	Apples/juice	0.01/0.01	0.54
527%	Oranges/juice	0.01/0.01	0.53
507%	Turnips/boiled	0.01/0.01	0.51
507%	Parsnips/boiled	0.01/0.01	0.51
504%	Sweet potatoes/boiled	0.01/0.01	0.50
467%	Potatoes/fried	0.01/0.01	0.47
453%	Florence fennels/boiled	0.01/0.01	0.45
443%	Beetroots/boiled	0.01/0.01	0.44

Expand/collapse list

Results for adults
No of processed commodities for which ARfD/ADI is exceeded (IESTI): 28

IESTI

Highest % of ARfD/ADI	Processed commodities	MRL/input for RA (mg/kg)	Exposure (µg/kg bw)
552%	Pumpkins/boiled	0.01/0.01	0.55
438%	Sugar beets (root)/sugar	0.01/0.12	0.44
417%	Cauliflowers/boiled	0.01/0.01	0.42
389%	Beetroots/boiled	0.01/0.01	0.39
338%	Celeries/boiled	0.01/0.01	0.34
333%	Apples/juice	0.01/0.01	0.33
241%	Broccoli/boiled	0.01/0.01	0.24
238%	Coffee beans/extraction	0.05/0.01	0.24
229%	Courgettes/boiled	0.01/0.01	0.23
213%	Parsnips/boiled	0.01/0.01	0.21
213%	Kohlrabies/boiled	0.01/0.01	0.21
208%	Wine grapes/juice	0.01/0.01	0.21
204%	Escaroles/broad-leaved	0.01/0.01	0.20
194%	Florence fennels/boiled	0.01/0.01	0.19
191%	Turnips/boiled	0.01/0.01	0.19

Expand/collapse list

Conclusion:
#N/A

For processed commodities, the toxicological reference value was exceeded in one or several cases.

PRIMo (scenario 2)

European Food Safety Authority

EFSA PRIMo revision 3.1; 2021/01/06

Oxamyl

LOQs (mg/kg) range from: 0.001 to: 0.05

Toxicological reference values

ADI (mg/kg bw per day):	0.0001	ARfD (mg/kg bw):	0.0001
Source of ADI:	EFSA	Source of ARfD:	EFSA
Year of evaluation:	2022	Year of evaluation:	2022

Input values

Details–chronic risk assessment | Supplementary results–chronic risk assessment

Details–acute risk assessment/children | Details–acute risk assessment/adults

Comments:

Normal mode

Chronic risk assessment: JMPR methodology (IEDI/TMDI)

No of diets exceeding the ADI : 22

TMDI/NEDI/IEDI calculation (based on average food consumption)

Calculated exposure (% of ADI)	MS Diet	Expsoure (µg/kg bw per day)	Highest contributor to MS diet (in % of ADI)	Commodity/ group of commodities	2nd contributor to MS diet (in % of ADI)	Commodity/ group of commodities	3rd contributor to MS diet (in % of ADI)	Commodity/ group of commodities	Exposure resulting from: MRLs set at the LOQ (in % of ADI)	Exposure resulting from: commodities not under assessment (in % of ADI)
315%	FI adult	0.32	278%	Coffee beans	6%	Potatoes	6%	Tomatoes	293%	22%
314%	NL toddler	0.31	60%	Milk: Cattle	54%	Bananas	35%	Maize/corn	210%	104%
186%	DE child	0.19	21%	Wheat	20%	Milk: Cattle	16%	Bananas	128%	58%
183%	NL child	0.18	24%	Milk: Cattle	21%	Wheat	19%	Bananas	124%	58%
182%	GEMS/Food G06	0.18	36%	Wheat	36%	Tomatoes	12%	Soyabeans	111%	71%
181%	GEMS/Food G11	0.18	37%	Soyabeans	20%	Potatoes	18%	Coffee beans	139%	42%
172%	GEMS/Food G08	0.17	20%	Wheat	20%	Soyabeans	20%	Potatoes	127%	45%
171%	GEMS/Food G10	0.17	33%	Soyabeans	20%	Wheat	15%	Potatoes	131%	40%
167%	GEMS/Food G07	0.17	21%	Wheat	19%	Potatoes	18%	Soyabeans	126%	42%
166%	FR child 3 15 yr	0.17	23%	Wheat	23%	Milk: Cattle	19%	Cocoa beans	129%	37%
165%	GEMS/Food G15	0.16	23%	Wheat	18%	Potatoes	17%	Soyabeans	120%	45%
158%	DK child	0.16	28%	Rye	22%	Wheat	16%	Cucumbers	97%	61%
149%	ES child	0.15	26%	Cocoa beans	22%	Wheat	12%	Milk: Cattle	115%	34%
148%	UK infant	0.15	39%	Milk: Cattle	16%	Potatoes	15%	Bananas	96%	52%
142%	FR toddler 2 3 yr	0.14	29%	Milk: Cattle	17%	Cocoa beans	15%	Wheat	110%	32%
133%	SE general	0.13	22%	Bovine: Muscle/meat	21%	Potatoes	18%	Bananas	68%	64%
129%	RO general	0.13	25%	Wheat	19%	Tomatoes	19%	Potatoes	75%	53%
123%	UK toddler	0.12	21%	Milk: Cattle	20%	Wheat	17%	Potatoes	79%	45%
116%	IE adult	0.12	11%	Wheat	11%	Potatoes	8%	Bananas	75%	40%
115%	DE women 14-50 yr	0.11	23%	Coffee beans	12%	Milk: Cattle	11%	Wheat	88%	27%
113%	DE general	0.11	23%	Coffee beans	12%	Milk: Cattle	9%	Wheat	88%	25%
105%	NL general	0.11	14%	Coffee beans	12%	Potatoes	10%	Wheat	79%	27%
100%	FI 3 yr	0.10	24%	Potatoes	13%	Bananas	10%	Cocoa beans	37%	63%
92%	PT general	0.09	27%	Potatoes	20%	Wheat	9%	Tomatoes	46%	46%
89%	FR adult	0.09	20%	Coffee beans	11%	Wheat	7%	Tea (dried leaves of Camellia sinensis	74%	15%
81%	FI 6 yr	0.08	19%	Potatoes	11%	Cocoa beans	8%	Bananas	34%	46%
79%	IT toddler	0.08	33%	Wheat	14%	Tomatoes	8%	Other cereals	49%	30%
78%	ES adult	0.08	12%	Wheat	8%	Tomatoes	6%	Cocoa beans	58%	20%
67%	FR infant	0.07	17%	Milk: Cattle	11%	Carrots	10%	Potatoes	37%	30%
61%	LT adult	0.06	16%	Potatoes	6%	Tomatoes	5%	Rye	32%	29%
57%	DK adult	0.06	6%	Potatoes	6%	Wheat	5%	Milk: Cattle	32%	25%
54%	IT adult	0.05	21%	Wheat	12%	Tomatoes	4%	Other cereals	32%	23%
53%	UK vegetarian	0.05	10%	Wheat	7%	Potatoes	6%	Tomatoes	31%	22%
50%	UK adult	0.05	8%	Wheat	7%	Potatoes	4%	Tomatoes	32%	19%
38%	PL general	0.04	17%	Potatoes	9%	Tomatoes	3%	Carrots	6%	32%
25%	IE child	0.02	6%	Wheat	4%	Milk: Cattle	3%	Potatoes	17%	8%

Conclusion:
The estimated TMDI/NEDI/IEDI was in the range of 0 % to 315 % of the ADI.
For 22 diet(s) the ADI is exceeded.
DISCLAIMER: Dietary data from the UK were included in PRIMO when the UK was a member of the European Union.

Acute risk assessment/children	Acute risk assessment/adults/general population
Details–acute risk assessment/children	Details–acute risk assessment/adults

The acute risk assessment is based on the ARfD. DISCLAIMER: Dietary data from the UK were included in PRIMO when the UK was a member of the European Union.

The calculation is based on the large portion of the most critical consumer group.

Show results for all crops

Unprocessed commodities

Results for children

No. of commodities for which ARfD/ADI is exceeded (IESTI): 23

IESTI

Highest % of ARfD/ADI	Commodities	MRL/input for RA (mg/kg)	Exposure (µg/kg bw)
971%	Bananas	0.01/0.01	0.97
769%	Potatoes	0.01/0.01	0.77
758%	Melons	0.01/0.01	0.76
656%	Cucumbers	0.01/0.01	0.66
634%	Carrots	0.01/0.01	0.63
611%	Watermelons	0.01/0.01	0.61
581%	Tomatoes	0.01/0.01	0.58
465%	Courgettes	0.01/0.01	0.46
393%	Carobs/Staint John's bread	0.05/0.05	0.39
361%	Parsnips	0.01/0.01	0.36
310%	Salsifies	0.01/0.01	0.31
265%	Oranges	0/0	0.27
252%	Avocados	0.01/0.01	0.25
250%	Aubergines/egg plants	0.02/0.01	0.25
242%	Milk: Goat	0.01/0.01	0.24
183%	Beans	0.01/0.01	0.18
179%	Honey and other apiculture	0.05/0.05	0.18
161%	Cocoa beans	0.05/0.05	0.16
144%	Coconuts	0.01/0.01	0.14
138%	Pears	0/0	0.14
124%	Milk: Cattle	0/0	0.12
108%	Apples	0/0	0.11
101%	Pineapples	0/0	0.10
95%	Peaches	0/0	0.10
85%	Poultry: Muscle/meat	0.01/0.01	0.08
84%	Brussels sprouts	0.01/0.01	0.08
81%	Bovine: Liver	0.01/0.01	0.08
79%	Mangoes	0/0	0.08
79%	Grapefruits	0/0	0.08
77%	Tea (dried leaves of	0.05/0.05	0.08
73%	Table grapes	0/0	0.07
73%	Bovine: Edible offals (other	0.01/0.01	0.07
72%	Wheat	0.01/0.01	0.07
67%	Lentils	0.01/0.01	0.07
66%	Peas	0.01/0.01	0.07
63%	Rice	0.01/0.01	0.06
62%	Kiwi fruits (green, red,	0/0	0.06
62%	Eggs: Chicken	0.01/0.01	0.06
61%	Swine: Muscle/meat	0.01/0.01	0.06
60%	Sweet peppers/bell peppers	0/0	0.06
59%	Mandarins	0/0	0.06
59%	Leeks	0/0	0.06
58%	Cauliflowers	0/0	0.06
58%	Pistachios	0.01/0.01	0.06
57%	Beetroots	0/0	0.06
55%	Celeriacs/turnip rooted	0/0	0.06
55%	Granate	0/0	0.06
52%	Kohlrabies	0/0	0.05
52%	Swedes/rutabagas	0/0	0.05
47%	Kaki/Japanese persimmons	0/0	0.05
44%	Head cabbages	0/0	0.04
44%	Kales	0/0	0.04
43%	Sweet corn	0/0	0.04
42%	Papayas	0/0	0.04
42%	Plums	0/0	0.04
42%	Chestnuts	0.01/0.01	0.04
42%	Broccoli	0/0	0.04
40%	Escaroles/broad-leaved	0/0	0.04

Results for adults

No. of commodities for which ARfD/ADI is exceeded (IESTI): 13

IESTI

Highest % of ARfD/ADI	Commodities	MRL/input for RA (mg/kg)	Exposure (µg/kg bw)
278%	Cucumbers	0.01/0.01	0.28
271%	Aubergines/egg plants	0.02/0.01	0.27
233%	Courgettes	0.01/0.01	0.23
212%	Bananas	0.01/0.01	0.21
203%	Watermelons	0.01/0.01	0.20
197%	Carrots	0.01/0.01	0.20
196%	Melons	0.01/0.01	0.20
184%	Milk: Goat	0.01/0.01	0.18
159%	Tomatoes	0.01/0.01	0.16
151%	Milk: Sheep	0.01/0.01	0.15
149%	Potatoes	0.01/0.01	0.15
141%	Parsnips	0.01/0.01	0.14
107%	Salsifies	0.01/0.01	0.11
86%	Coconuts	0.01/0.01	0.09
84%	Cocoa beans	0.05/0.05	0.08
75%	Avocados	0.01/0.01	0.08
69%	Honey and other apiculture	0.05/0.05	0.07
66%	Beans	0.01/0.01	0.07
62%	Lentils	0.01/0.01	0.06
61%	Oranges	0/0	0.06
61%	Gherkins	0.01/0.01	0.06
60%	Brussels sprouts	0.01/0.01	0.06
59%	Poultry: Muscle	0.01/0.01	0.06
55%	Soyabeans	0.01/0.01	0.06
47%	Poultry: Liver	0.01/0.01	0.05
45%	Chestnuts	0.01/0.01	0.05
44%	Oil palm fruits	0.01/0.01	0.04
43%	Rice	0.01/0.01	0.04
42%	Head cabbages	0/0	0.04
42%	Wheat	0.01/0.01	0.04
40%	Bovine: Liver	0.01/0.01	0.04
39%	Milk: Cattle	0/0	0.04
38%	Coffee beans	0.05/0.05	0.04
34%	Swedes/rutabagas	0/0	0.03
34%	Table grapes	0/0	0.03
33%	Peas	0.01/0.01	0.03
33%	Bovine: Edible offals (other	0.01/0.01	0.03
33%	Swine: Other products	0.01/0.01	0.03
31%	Pears	0/0	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Pineapples	0/0	0.03
28%	Bovine: Muscle	0.01/0.01	0.03
28%	Yams	0/0	0.03
28%	Apples	0/0	0.03
28%	Sheep: Liver	0.01/0.01	0.03
28%	Sheep: Liver	0.01/0.01	0.03
27%	Pistachios	0.01/0.01	0.03
26%	Swine: Edible offals (other	0.01/0.01	0.03
26%	Mangoes	0/0	0.03
25%	Chinese cabbages/pe-tsai	0/0	0.03
25%	Tea (dried leaves of Camellia	0.05/0.05	0.03
24%	Rye	0.01/0.01	0.02

	40%	Witloofs/Belgian endives	0/0	0.04	24%	Swine: Muscle/meat	0.01/0.01	0.02
	39%	Carambolas	0/0	0.04	24%	Barley	0.01/0.01	0.02
	39%	Fennel seed	0.05/0.05	0.04	24%	Equine: Muscle/meat	0.01/0.01	0.02
	38%	Lettuces	0/0	0.04	24%	Broccoli	0/0	0.02
	38%	Bovine: Kidney	0.01/0.01	0.04	24%	Wine grapes	0/0	0.02
	37%	Celeries	0/0	0.04	24%	Sheep: Muscle/meat	0.01/0.01	0.02
	37%	Rhubarbs	0/0	0.04	23%	Cauliflowers	0/0	0.02
	36%	Bovine: Muscle/meat	0.01/0.01	0.04	23%	Beetroots	0/0	0.02
	36%	Turnips	0/0	0.04	23%	Peanuts/groundnuts	0.01/0.01	0.02
	36%	Milk: Sheep	0.01/0.01	0.04	23%	Pecans	0.01/0.01	0.02
	35%	Coffee beans	0.05/0.05	0.04	22%	Walnuts	0.01/0.01	0.02
	35%	Apricots	0/0	0.03	22%	Walnuts	0.01/0.01	0.02
	35%	Other farmed animals:	0.01/0.01	0.03	22%	Kaki/Japanese persimmons	0/0	0.02
	34%	Lemons	0/0	0.03	21%	Eggs: Chicken	0.01/0.01	0.02
	34%	Walnuts	0.01/0.01	0.03	21%	Bovine: Kidney	0.01/0.01	0.02
	34%	Walnuts	0.01/0.01	0.03	21%	Macadamia	0.01/0.01	0.02
	34%	Maize/corn	0.01/0.01	0.03	21%	Sweet potatoes	0/0	0.02
	33%	Hazelnuts/cobnuts	0.01/0.01	0.03	20%	Swine: Fat tissue	0.01/0.01	0.02
	32%	Chinese cabbages/pe-tsai	0/0	0.03	20%	Escaroles/broad-leaved	0/0	0.02
	32%	Sunflower seeds	0.01/0.01	0.03	20%	Rooibos	0.05/0.05	0.02
	32%	Rye	0.01/0.01	0.03	20%	Rooibos	0.05/0.05	0.02
	31%	Yams	0/0	0.03	20%	Bovine: Other products	0.01/0.01	0.02
	31%	Safflower seeds	0.01/0.01	0.03	19%	Kales	0/0	0.02
	31%	Vanilla pods	0.05/0.05	0.03	19%	Chards/beet leaves	0/0	0.02
	30%	Equine: Muscle/meat	0.01/0.01	0.03	19%	Peaches	0/0	0.02
	30%	Swine: Edible offals (other	0.01/0.01	0.03	19%	Florence fennels	0/0	0.02
	29%	Peanuts/groundnuts	0.01/0.01	0.03	18%	Witloofs/Belgian endives	0/0	0.02
	29%	Almonds	0.01/0.01	0.03	18%	Terrestrial invertebrate	0.01/0.01	0.02
	28%	Gherkins	0.01/0.01	0.03	18%	Mandarins	0/0	0.02
	28%	Barley	0.01/0.01	0.03	18%	Grapefruits	0/0	0.02
	28%	Pecans	0.01/0.01	0.03	18%	Guavas	0/0	0.02
	27%	Sheep: Muscle/meat	0.01/0.01	0.03	18%	Plums	0/0	0.02
	27%	Pumpkins	0/0	0.03	18%	Granate	0/0	0.02
	25%	Cashew nuts	0.01/0.01	0.03	17%	Buckwheat and other pseudo-	0.01/0.01	0.02
	25%	Buckwheat and other	0.01/0.01	0.02	17%	Cashew nuts	0.01/0.01	0.02
	25%	Quinces	0/0	0.02	16%	Carambolas	0/0	0.02
	25%	Radishes	0/0	0.02	16%	Sweet peppers/bell peppers	0/0	0.02
	23%	Soyabeans	0.01/0.01	0.02	16%	Celeries	0/0	0.02
	23%	Onions	0/0	0.02	16%	Celeries	0/0	0.02
	23%	Spinaches	0/0	0.02	16%	Sweet corn	0/0	0.02
	22%	Prickly pears/cactus fruits	0/0	0.02	15%	Quinces	0/0	0.02
	22%	Guavas	0/0	0.02	15%	Hybiscus/roselle	0.05/0.05	0.02
	21%	Bovine: Fat tissue	0.01/0.01	0.02	15%	Onions	0/0	0.01
	20%	Limes	0/0	0.02	15%	Pumpkins	0/0	0.01
	19%	Asparagus	0/0	0.02	14%	Almonds	0.01/0.01	0.01
	18%	Globe artichokes	0/0	0.02	14%	Swine: Liver	0.01/0.01	0.01
	17%	Swine: Fat tissue	0.01/0.01	0.02	14%	Kohlrabies	0/0	0.01
	17%	Cultivated fungi	0/0	0.02	14%	Papayas	0/0	0.01
	17%	Oil palm kernels	0.01/0.01	0.02	14%	Kiwi fruits (green, red, yellow)	0/0	0.01
	16%	Strawberries	0/0	0.02	13%	Leeks	0/0	0.01
	16%	Florence fennels	0/0	0.02	13%	Globe artichokes	0/0	0.01
	16%	Sorghum	0.01/0.01	0.02	13%	Poultry: Kidney	0.01/0.01	0.01
	16%	Spring onions/green onions	0/0	0.02	12%	Lettuces	0/0	0.01
	16%	Chards/beet leaves	0/0	0.02	12%	Hazelnuts/cobnuts	0.01/0.01	0.01
	15%	Cherimoyas	0/0	0.02	12%	Celeriacs/turnip rooted	0/0	0.01
	15%	Sesame seeds	0.01/0.01	0.01	11%	Figs	0/0	0.01
	15%	Pumpkin seeds	0.01/0.01	0.01	11%	Turnips	0/0	0.01
	14%	Medlar	0/0	0.01	11%	Apricots	0/0	0.01
	14%	Rapeseeds/canola seeds	0.01/0.01	0.01	11%	Maize/corn	0.01/0.01	0.01
	13%	Capers	0.05/0.05	0.01	11%	Cherimoyas	0/0	0.01
	13%	Olives for oil production	0.01/0.01	0.01	10%	Radishes	0/0	0.01
	13%	Swine: Kidney	0.01/0.01	0.01	10%	Cardoons	0/0	0.01
	12%	Swine: Liver	0.01/0.01	0.01	10%	Parsley roots/Hamburg roots	0/0	0.01
	12%	Cherries (sweet)	0/0	0.01	10%	Cherries (sweet)	0/0	0.01
	12%	Litchis/lychees	0/0	0.01	10%	Cherries (sweet)	0/0	0.01
	12%	Figs	0/0	0.01	10%	Pine nut kernels	0.01/0.01	0.01
	11%	Beans (with pods)	0/0	0.01	10%	Pine nut kernels	0.01/0.01	0.01
	11%	Poultry: Liver	0.01/0.01	0.01	10%	Pine nut kernels	0.01/0.01	0.01
	11%	Blackberries	0/0	0.01	10%	Bovine: Fat tissue	0.01/0.01	0.01
	11%	Linseeds	0.01/0.01	0.01	9%	Jerusalem artichokes	0/0	0.01
	10%	Mustard seeds	0.01/0.01	0.01	9%	Prickly pears/cactus fruits	0/0	0.01
	10%	Chamomille	0.05/0.05	0.01	9%	Strawberries	0/0	0.01
	10%	Chamomille	0.05/0.05	0.01	9%	Rhubarbs	0/0	0.01
	10%	Chamomille	0.05/0.05	0.01	9%	HOPS (dried)	0.05/0.05	0.01
	10%	Chamomille	0.05/0.05	0.01	9%	Blueberries	0/0	0.01
	10%	Chamomille	0.05/0.05	0.01	9%	Lemons	0/0	0.01
	10%	Chamomille	0.05/0.05	0.01	8%	Blackberries	0/0	0.01
	10%	Chamomille	0.05/0.05	0.01	8%	Goat: Muscle	0.01/0.01	0.01
	10%	Chamomille	0.05/0.05	0.01	8%	Olives for oil production	0.01/0.01	0.01
	10%	Chamomille	0.05/0.05	0.01	8%	Beans (with pods)	0/0	0.01
	10%	Chamomille	0.05/0.05	0.01	8%	Asparagus	0/0	0.01
	10%	Cinnamon	0.05/0.05	0.01	8%	Amphibians and reptiles	0.01/0.01	0.01

9%	Wine grapes	0/0	0.01	7%	Horseradishes	0/0	0.01
9%	Raspberries (red and yellow)	0/0	0.01	7%	Limes	0/0	0.01
9%	Brazil nuts	0.01/0.01	0.01	7%	Poppy seeds	0.01/0.01	0.01
8%	Peas (without pods)	0/0	0.01	7%	Poppy seeds	0.01/0.01	0.01
8%	Peas (with pods)	0/0	0.01	7%	Poppy seeds	0.01/0.01	0.01
8%	Cassava roots/manioc	0/0	0.01	7%	Poppy seeds	0.01/0.01	0.01
8%	Currants (red, black and	0/0	0.01	7%	Brazil nuts	0.01/0.01	0.01
8%	Beans (without pods)	0/0	0.01	7%	Sheep: Edible offals (other	0.01/0.01	0.01
7%	Common millet/proso millet	0.01/0.01	0.01	7%	Medlar	0/0	0.01
7%	Passionfruits/maracujas	0/0	0.01	7%	Currants (red, black and	0/0	0.01
6%	Blueberries	0/0	0.01	6%	Oil palm kernels	0.01/0.01	0.01
6%	Gooseberries (green, red	0/0	0.01	5%	Raspberries (red and yellow)	0/0	0.01
6%	Lentils (fresh)	0/0	0.01	5%	Peas (without pods)	0/0	0.01
6%	Oat	0.01/0.01	0.01	5%	Red mustards	0/0	0.01
5%	Macadamia	0.01/0.01	0.01	5%	Rapeseeds/canola seeds	0.01/0.01	0.01
5%	Sweet potatoes	0/0	0.01	5%	Cultivated fungi	0/0	0.01
5%	Juniper berry	0.05/0.05	0.01	5%	Anise/aniseed	0.05/0.05	0.01
4%	Cranberries	0/0	0.00	5%	Anise/aniseed	0.05/0.05	0.01
4%	Parsley roots/Hamburg roots	0/0	0.00	5%	Anise/aniseed	0.05/0.05	0.01

Expand/collapse list

Total number of commodities exceeding the ARfD/ADI in children and adult diets (IESTI calculation) #N/A

Processed commodities

Results for children
No of processed commodities for which ARfD/ADI is exceeded (IESTI): 13

IESTI

Highest % of ARfD/ADI	Processed commodities	MRL/input for RA (mg/kg)	Exposure (µg/kg bw)
507%	Parsnips/boiled	0.01/0.01	0.51
467%	Potatoes/fried	0.01/0.01	0.47
359%	Carrots/juice	0.01/0.01	0.36
354%	Courgettes/boiled	0.01/0.01	0.35
297%	Potatoes/dried (flakes)	0.01/0.02	0.30
258%	Salsifies/boiled	0.01/0.01	0.26
230%	Gherkins/pickled	0.01/0.01	0.23
190%	Tomatoes/juice	0.01/0.01	0.19
151%	Ginger/jam	0.05/0.05	0.15
116%	Maize/oil	0.01/0.13	0.12
110%	Sugar beets (root)/sugar	0.01/0.01	0.11
105%	Oranges/juice	0/0	0.11
102%	Brussels sprouts/boiled	0.01/0.01	0.10
95%	Tomatoes/sauce/puree	0.01/0.01	0.10
94%	Coffee beans/extraction	0.05/0.01	0.09

Expand/collapse list

Results for adults
No of processed commodities for which ARfD/ADI is exceeded (IESTI): 3

IESTI

Highest % of ARfD/ADI	Processed commodities	MRL/input for RA (mg/kg)	Exposure (µg/kg bw)
238%	Coffee beans/extraction	0.05/0.01	0.24
229%	Courgettes/boiled	0.01/0.01	0.23
213%	Parsnips/boiled	0.01/0.01	0.21
82%	Salsifies/boiled	0.01/0.01	0.08
82%	Tomatoes/sauce/puree	0.01/0.01	0.08
82%	Carrots/canned	0.01/0.01	0.08
72%	Beans/canned	0.01/0.01	0.07
63%	Maize/oil	0.01/0.13	0.06
63%	Ginger/jam	0.05/0.05	0.06
55%	Pumpkins/boiled	0/0	0.06
44%	Sugar beets (root)/sugar	0.01/0.01	0.04
42%	Potatoes/chips	0.01/0.01	0.04
42%	Cauliflowers/boiled	0/0	0.04
39%	Beetroots/boiled	0/0	0.04
38%	Carob (st johns bread)/flour	0.05/0.05	0.04

Conclusion:
#N/A

For processed commodities, the toxicological reference value was exceeded in one or several cases.

PRIMo (scenario 3)

European Food Safety Authority

EFSA PRIMo revision 3.1; 2021/01/06

Oxamyl

LOQs (mg/kg) range from: 0.001 to: 0.05

Toxicological reference values

ADI (mg/kg bw per day):	0.0001	ARfD (mg/kg bw):	0.0001
Source of ADI:	EFSA	Source of ARfD:	EFSA
Year of evaluation:	2022	Year of evaluation:	2022

Input values

Details–chronic risk assessment | Supplementary results–chronic risk assessment

Details–acute risk assessment/children | Details–acute risk assessment/adults

Comments:

Normal mode

Chronic risk assessment: JMPR methodology (IEDI/TMDI)

No of diets exceeding the ADI : 15

TMDI/NEDI/IEDI calculation (based on average food consumption)	Calculated exposure (% of ADI)	MS Diet	Expsoure (µg/kg bw per day)	Highest contributor to MS diet (in % of ADI)	Commodity/ group of commodities	2nd contributor to MS diet (in % of ADI)	Commodity/ group of commodities	3rd contributor to MS diet (in % of ADI)	Commodity/ group of commodities	Exposure resulting from MRLs set at the LOQ (in % of ADI)	Exposure resulting from commodities not under assessment (in % of ADI)
	297%	FI adult	0.30	278%	Coffee beans	4%	Rye	3%	Cocoa beans	297%	
	228%	NL toddler	0.23	60%	Milk: Cattle	35%	Maize/corn	20%	Wheat	228%	
	146%	GEMS/Food G11	0.15	37%	Soyabeans	18%	Coffee beans	18%	Wheat	146%	
	140%	NL child	0.14	24%	Milk: Cattle	21%	Wheat	11%	Cocoa beans	140%	
	138%	GEMS/Food G10	0.14	33%	Soyabeans	20%	Wheat	8%	Coffee beans	138%	
	138%	FR child 3 15 yr	0.14	23%	Wheat	23%	Milk: Cattle	19%	Cocoa beans	138%	
	136%	DE child	0.14	21%	Wheat	20%	Milk: Cattle	15%	Cocoa beans	136%	
	135%	GEMS/Food G08	0.13	20%	Wheat	20%	Soyabeans	10%	Coffee beans	134%	
	133%	GEMS/Food G07	0.13	21%	Wheat	18%	Soyabeans	9%	Coffee beans	133%	
	128%	GEMS/Food G15	0.13	23%	Wheat	17%	Soyabeans	10%	Coffee beans	127%	
	125%	GEMS/Food G06	0.12	36%	Wheat	12%	Soyabeans	8%	Rice	123%	
	120%	ES child	0.12	26%	Cocoa beans	22%	Wheat	12%	Milk: Cattle	120%	
	118%	FR toddler 2 3 yr	0.12	29%	Milk: Cattle	17%	Cocoa beans	15%	Wheat	117%	
	105%	DK child	0.11	28%	Rye	22%	Wheat	13%	Milk: Cattle	105%	
	105%	UK infant	0.10	39%	Milk: Cattle	13%	Wheat	7%	Eggs: Chicken	105%	
	96%	DE women 14-50 yr	0.10	23%	Coffee beans	12%	Milk: Cattle	11%	Wheat	96%	
	95%	DE general	0.10	23%	Coffee beans	12%	Milk: Cattle	9%	Wheat	95%	
	88%	UK toddler	0.09	21%	Milk: Cattle	20%	Wheat	8%	Beans	88%	
	86%	RO general	0.09	25%	Wheat	12%	Milk: Cattle	7%	Sunflower seeds	85%	
	86%	NL general	0.09	14%	Coffee beans	10%	Wheat	8%	Milk: Cattle	86%	
	82%	IE adult	0.08	11%	Wheat	7%	Tea (dried leaves of Camellia sinensis)	4%	Milk: Cattle	80%	
	78%	SE general	0.08	22%	Bovine: Muscle/meat	16%	Wheat	12%	Milk: Cattle	78%	
	77%	FR adult	0.08	20%	Coffee beans	11%	Wheat	7%	Tea (dried leaves of Camellia sinensis	77%	
	62%	ES adult	0.06	12%	Wheat	6%	Cocoa beans	5%	Milk: Cattle	61%	
	54%	IT toddler	0.05	33%	Wheat	8%	Other cereals	3%	Tomatoes	54%	
	54%	PT general	0.05	20%	Wheat	5%	Potatoes	4%	Rice	54%	
	46%	FI 3 yr	0.05	10%	Cocoa beans	6%	Wheat	5%	Potatoes	46%	
	42%	FR infant	0.04	17%	Milk: Cattle	4%	Wheat	2%	Cocoa beans	42%	
	41%	FI 6 yr	0.04	11%	Cocoa beans	5%	Wheat	4%	Potatoes	41%	
	37%	LT adult	0.04	5%	Rye	5%	Wheat	5%	Swine: Muscle/meat	37%	
	36%	DK adult	0.04	6%	Wheat	5%	Milk: Cattle	4%	Swine: Muscle/meat	36%	
	36%	IT adult	0.04	21%	Wheat	4%	Other cereals	2%	Tomatoes	35%	
	35%	UK adult	0.04	8%	Wheat	3%	Bovine: Muscle/meat	3%	Milk: Cattle	35%	
	35%	UK vegetarian	0.04	10%	Wheat	4%	Beans	3%	Milk: Cattle	35%	
	18%	IE child	0.02	6%	Wheat	4%	Milk: Cattle	1%	Rice	18%	
	12%	PL general	0.01	3%	Potatoes	2%	Apples	2%	Tomatoes	11%	

Conclusion:
The estimated TMDI/NEDI/IEDI was in the range of 0 % to 296.6 % of the ADI.
For 15 diet(s) the ADI is exceeded.
DISCLAIMER: Dietary data from the UK were included in PRIMO when the UK was a member of the European Union.

Acute risk assessment/children	Acute risk assessment/adults/general population
Details–acute risk assessment/children	Details–acute risk assessment/adults

The acute risk assessment is based on the ARfD. DISCLAIMER: Dietary data from the UK were included in PRIMO when the UK was a member of the European Union.

The calculation is based on the large portion of the most critical consumer group.

Show results for all crops

Unprocessed commodities

Results for children
No. of commodities for which ARfD/ADI is exceeded (IESTI): 16

IESTI

Highest % of ARfD/ADI	Commodities	MRL/input for RA (mg/kg)	Exposure (µg/kg bw)
393%	Carobs/Staint John's bread	0.05/0.05	0.39
265%	Oranges	0/0	0.27
252%	Avocados	0.01/0.01	0.25
242%	Milk: Goat	0.01/0.01	0.24
183%	Beans	0.01/0.01	0.18
179%	Honey and other apiculture	0.05/0.05	0.18
161%	Cocoa beans	0.05/0.05	0.16
154%	Potatoes	0/0	0.15
152%	Melons	0/0	0.15
144%	Coconuts	0.01/0.01	0.14
138%	Pears	0/0	0.14
124%	Milk: Cattle	0/0	0.12
122%	Watermelons	0/0	0.12
116%	Tomatoes	0/0	0.12
108%	Apples	0/0	0.11
101%	Pineapples	0/0	0.10
97%	Bananas	0/0	0.10
95%	Peaches	0/0	0.10
85%	Poultry: Muscle/meat	0.01/0.01	0.08
81%	Bovine: Liver	0.01/0.01	0.08
79%	Mangoes	0/0	0.08
79%	Grapefruits	0/0	0.08
77%	Tea (dried leaves of	0.05/0.05	0.08
73%	Table grapes	0/0	0.07
73%	Bovine: Edible offals (other	0.01/0.01	0.07
72%	Wheat	0.01/0.01	0.07
67%	Lentils	0.01/0.01	0.07
66%	Peas	0.01/0.01	0.07
66%	Cucumbers	0/0	0.07
63%	Carrots	0/0	0.06
63%	Rice	0.01/0.01	0.06
62%	Kiwi fruits (green, red,	0/0	0.06
62%	Eggs: Chicken	0.01/0.01	0.06
61%	Swine: Muscle/meat	0.01/0.01	0.06
60%	Sweet peppers/bell peppers	0/0	0.06
59%	Mandarins	0/0	0.06
59%	Leeks	0/0	0.06
58%	Cauliflowers	0/0	0.06
58%	Pistachios	0.01/0.01	0.06
57%	Beetroots	0/0	0.06
55%	Celeriacs/turnip rooted	0/0	0.06
55%	Granate	0/0	0.06
52%	Kohlrabies	0/0	0.05
52%	Swedes/rutabagas	0/0	0.05
47%	Kaki/Japanese persimmons	0/0	0.05
46%	Courgettes	0/0	0.05
44%	Head cabbages	0/0	0.04
44%	Kales	0/0	0.04
43%	Sweet corn	0/0	0.04
42%	Papayas	0/0	0.04
42%	Plums	0/0	0.04
42%	Chestnuts	0.01/0.01	0.04
42%	Broccoli	0/0	0.04
40%	Escaroles/broad-leaved	0/0	0.04
40%	Witloofs/Belgian endives	0/0	0.04
39%	Carambolas	0/0	0.04
39%	Fennel seed	0.05/0.05	0.04
38%	Lettuces	0/0	0.04

Results for adults
No. of commodities for which ARfD/ADI is exceeded (IESTI): 2

IESTI

Highest % of ARfD/ADI	Commodities	MRL/input for RA (mg/kg)	Exposure (µg/kg bw)
184%	Milk: Goat	0.01/0.01	0.18
151%	Milk: Sheep	0.01/0.01	0.15
86%	Coconuts	0.01/0.01	0.09
84%	Cocoa beans	0.05/0.05	0.08
75%	Avocados	0.01/0.01	0.08
69%	Honey and other apiculture	0.05/0.05	0.07
66%	Beans	0.01/0.01	0.07
62%	Lentils	0.01/0.01	0.06
61%	Oranges	0/0	0.06
59%	Poultry: Muscle	0.01/0.01	0.06
55%	Soyabeans	0.01/0.01	0.06
47%	Poultry: Liver	0.01/0.01	0.05
45%	Chestnuts	0.01/0.01	0.05
44%	Oil palm fruits	0.01/0.01	0.04
43%	Rice	0.01/0.01	0.04
42%	Head cabbages	0/0	0.04
42%	Wheat	0.01/0.01	0.04
41%	Watermelons	0/0	0.04
40%	Bovine: Liver	0.01/0.01	0.04
39%	Melons	0/0	0.04
39%	Milk: Cattle	0/0	0.04
38%	Coffee beans	0.05/0.05	0.04
34%	Swedes/rutabagas	0/0	0.03
34%	Table grapes	0/0	0.03
33%	Peas	0.01/0.01	0.03
33%	Bovine: Edible offals (other	0.01/0.01	0.03
33%	Swine: Other products	0.01/0.01	0.03
32%	Tomatoes	0/0	0.03
31%	Pears	0/0	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Chamomille	0.05/0.05	0.03
30%	Potatoes	0/0	0.03
30%	Pineapples	0/0	0.03
28%	Bovine: Muscle	0.01/0.01	0.03
28%	Yams	0/0	0.03
28%	Apples	0/0	0.03
28%	Sheep: Liver	0.01/0.01	0.03
28%	Sheep: Liver	0.01/0.01	0.03
28%	Cucumbers	0/0	0.03
27%	Aubergines/egg plants	0/0	0.03
27%	Pistachios	0.01/0.01	0.03
26%	Swine: Edible offals (other	0.01/0.01	0.03
26%	Mangoes	0/0	0.03
25%	Chinese cabbages/pe-tsai	0/0	0.03
25%	Tea (dried leaves of Camellia	0.05/0.05	0.03
24%	Rye	0.01/0.01	0.02
24%	Swine: Muscle/meat	0.01/0.01	0.02
24%	Barley	0.01/0.01	0.02
24%	Equine: Muscle/meat	0.01/0.01	0.02
24%	Broccoli	0/0	0.02
24%	Wine grapes	0/0	0.02
24%	Sheep: Muscle/meat	0.01/0.01	0.02
23%	Courgettes	0/0	0.02

38%	Bovine: Kidney	0.01/0.01	0.04
37%	Celeries	0/0	0.04
37%	Rhubarbs	0/0	0.04
36%	Parsnips	0/0	0.04
36%	Bovine: Muscle/meat	0.01/0.01	0.04
36%	Turnips	0/0	0.04
36%	Milk: Sheep	0.01/0.01	0.04
35%	Coffee beans	0.05/0.05	0.04
35%	Apricots	0/0	0.03
35%	Other farmed animals:	0.01/0.01	0.03
34%	Lemons	0/0	0.03
34%	Walnuts	0.01/0.01	0.03
34%	Walnuts	0.01/0.01	0.03
34%	Maize/corn	0.01/0.01	0.03
33%	Hazelnuts/cobnuts	0.01/0.01	0.03
32%	Chinese cabbages/pe-tsai	0/0	0.03
32%	Sunflower seeds	0.01/0.01	0.03
32%	Rye	0.01/0.01	0.03
31%	Yams	0/0	0.03
31%	Salsifies	0/0	0.03
31%	Safflower seeds	0.01/0.01	0.03
31%	Vanilla pods	0.05/0.05	0.03
30%	Equine: Muscle/meat	0.01/0.01	0.03
30%	Swine: Edible offals (other	0.01/0.01	0.03
29%	Peanuts/groundnuts	0.01/0.01	0.03
29%	Almonds	0.01/0.01	0.03
28%	Barley	0.01/0.01	0.03
28%	Pecans	0.01/0.01	0.03
27%	Sheep: Muscle/meat	0.01/0.01	0.03
27%	Pumpkins	0/0	0.03
25%	Cashew nuts	0.01/0.01	0.03
25%	Aubergines/egg plants	0/0	0.03
25%	Buckwheat and other	0.01/0.01	0.02
25%	Quinces	0/0	0.02
25%	Radishes	0/0	0.02
23%	Soyabeans	0.01/0.01	0.02
23%	Onions	0/0	0.02
23%	Spinaches	0/0	0.02
22%	Prickly pears/cactus fruits	0/0	0.02
22%	Guavas	0/0	0.02
21%	Bovine: Fat tissue	0.01/0.01	0.02
20%	Limes	0/0	0.02
19%	Asparagus	0/0	0.02
18%	Globe artichokes	0/0	0.02
17%	Swine: Fat tissue	0.01/0.01	0.02
17%	Cultivated fungi	0/0	0.02
17%	Oil palm kernels	0.01/0.01	0.02
16%	Strawberries	0/0	0.02
16%	Florence fennels	0/0	0.02
16%	Sorghum	0.01/0.01	0.02
16%	Spring onions/green onions	0/0	0.02
16%	Chards/beet leaves	0/0	0.02
15%	Cherimoyas	0/0	0.02
15%	Sesame seeds	0.01/0.01	0.01
15%	Pumpkin seeds	0.01/0.01	0.01
14%	Medlar	0/0	0.01
14%	Rapeseeds/canola seeds	0.01/0.01	0.01
13%	Capers	0.05/0.05	0.01
13%	Olives for oil production	0.01/0.01	0.01
13%	Swine: Kidney	0.01/0.01	0.01
12%	Swine: Liver	0.01/0.01	0.01
12%	Cherries (sweet)	0/0	0.01
12%	Litchis/lychees	0/0	0.01
12%	Figs	0/0	0.01
11%	Beans (with pods)	0/0	0.01
11%	Poultry: Liver	0.01/0.01	0.01
11%	Blackberries	0/0	0.01
11%	Linseeds	0.01/0.01	0.01
10%	Mustard seeds	0.01/0.01	0.01
10%	Chamomille	0.05/0.05	0.01
10%	Chamomille	0.05/0.05	0.01
10%	Chamomille	0.05/0.05	0.01
10%	Chamomille	0.05/0.05	0.01
10%	Chamomille	0.05/0.05	0.01
10%	Chamomille	0.05/0.05	0.01
10%	Chamomille	0.05/0.05	0.01
10%	Chamomille	0.05/0.05	0.01
10%	Chamomille	0.05/0.05	0.01
10%	Chamomille	0.05/0.05	0.01
10%	Cinnamon	0.05/0.05	0.01
9%	Wine grapes	0/0	0.01
9%	Raspberries (red and yellow)	0/0	0.01
23%	Cauliflowers	0/0	0.02
23%	Beetroots	0/0	0.02
23%	Peanuts/groundnuts	0.01/0.01	0.02
23%	Pecans	0.01/0.01	0.02
22%	Walnuts	0.01/0.01	0.02
22%	Walnuts	0.01/0.01	0.02
22%	Kaki/Japanese persimmons	0/0	0.02
21%	Eggs: Chicken	0.01/0.01	0.02
21%	Bananas	0/0	0.02
21%	Bovine: Kidney	0.01/0.01	0.02
21%	Macadamia	0.01/0.01	0.02
21%	Sweet potatoes	0/0	0.02
20%	Swine: Fat tissue	0.01/0.01	0.02
20%	Escaroles/broad-leaved	0/0	0.02
20%	Rooibos	0.05/0.05	0.02
20%	Rooibos	0.05/0.05	0.02
20%	Bovine: Other products	0.01/0.01	0.02
20%	Carrots	0/0	0.02
19%	Kales	0/0	0.02
19%	Chards/beet leaves	0/0	0.02
19%	Peaches	0/0	0.02
19%	Florence fennels	0/0	0.02
18%	Witloofs/Belgian endives	0/0	0.02
18%	Terrestrial invertebrate	0.01/0.01	0.02
18%	Mandarins	0/0	0.02
18%	Grapefruits	0/0	0.02
18%	Guavas	0/0	0.02
18%	Plums	0/0	0.02
18%	Granate	0/0	0.02
17%	Buckwheat and other pseudo-	0.01/0.01	0.02
17%	Cashew nuts	0.01/0.01	0.02
16%	Carambolas	0/0	0.02
16%	Sweet peppers/bell peppers	0/0	0.02
16%	Celeries	0/0	0.02
16%	Celeries	0/0	0.02
16%	Sweet corn	0/0	0.02
15%	Quinces	0/0	0.02
15%	Hybiscus/roselle	0.05/0.05	0.02
15%	Onions	0/0	0.01
15%	Pumpkins	0/0	0.01
14%	Almonds	0.01/0.01	0.01
14%	Swine: Liver	0.01/0.01	0.01
14%	Kohlrabies	0/0	0.01
14%	Parsnips	0/0	0.01
14%	Papayas	0/0	0.01
14%	Kiwi fruits (green, red, yellow)	0/0	0.01
13%	Leeks	0/0	0.01
13%	Globe artichokes	0/0	0.01
13%	Poultry: Kidney	0.01/0.01	0.01
12%	Lettuces	0/0	0.01
12%	Hazelnuts/cobnuts	0.01/0.01	0.01
12%	Celeriacs/turnip rooted	0/0	0.01
11%	Figs	0/0	0.01
11%	Turnips	0/0	0.01
11%	Apricots	0/0	0.01
11%	Maize/corn	0.01/0.01	0.01
11%	Cherimoyas	0/0	0.01
11%	Salsifies	0/0	0.01
10%	Radishes	0/0	0.01
10%	Cardoons	0/0	0.01
10%	Parsley roots/Hamburg roots	0/0	0.01
10%	Cherries (sweet)	0/0	0.01
10%	Cherries (sweet)	0/0	0.01
10%	Pine nut kernels	0.01/0.01	0.01
10%	Pine nut kernels	0.01/0.01	0.01
10%	Pine nut kernels	0.01/0.01	0.01
10%	Bovine: Fat tissue	0.01/0.01	0.01
9%	Jerusalem artichokes	0/0	0.01
9%	Prickly pears/cactus fruits	0/0	0.01
9%	Strawberries	0/0	0.01
9%	Rhubarbs	0/0	0.01
9%	HOPS (dried)	0.05/0.05	0.01
9%	Blueberries	0/0	0.01
9%	Lemons	0/0	0.01
8%	Blackberries	0/0	0.01
8%	Goat: Muscle	0.01/0.01	0.01
8%	Olives for oil production	0.01/0.01	0.01
8%	Beans (with pods)	0/0	0.01
8%	Asparagus	0/0	0.01
8%	Amphibians and reptiles	0.01/0.01	0.01
7%	Horseradishes	0/0	0.01
7%	Limes	0/0	0.01

9%	Brazil nuts	0.01/0.01	0.01	7%	Poppy seeds	0.01/0.01	0.01
8%	Brussels sprouts	0/0	0.01	7%	Poppy seeds	0.01/0.01	0.01
8%	Peas (without pods)	0/0	0.01	7%	Poppy seeds	0.01/0.01	0.01
8%	Peas (with pods)	0/0	0.01	7%	Poppy seeds	0.01/0.01	0.01
8%	Cassava roots/manioc	0/0	0.01	7%	Brazil nuts	0.01/0.01	0.01
8%	Currants (red, black and	0/0	0.01	7%	Sheep: Edible offals (other	0.01/0.01	0.01
8%	Beans (without pods)	0/0	0.01	7%	Medlar	0/0	0.01
7%	Common millet/proso millet	0.01/0.01	0.01	7%	Currants (red, black and	0/0	0.01
7%	Passionfruits/maracujas	0/0	0.01	6%	Oil palm kernels	0.01/0.01	0.01
6%	Blueberries	0/0	0.01	6%	Gherkins	0/0	0.01
6%	Gooseberries (green, red	0/0	0.01	6%	Brussels sprouts	0/0	0.01
6%	Lentils (fresh)	0/0	0.01	5%	Raspberries (red and yellow)	0/0	0.01
6%	Oat	0.01/0.01	0.01	5%	Peas (without pods)	0/0	0.01
5%	Macadamia	0.01/0.01	0.01	5%	Red mustards	0/0	0.01
5%	Sweet potatoes	0/0	0.01	5%	Rapeseeds/canola seeds	0.01/0.01	0.01
5%	Juniper berry	0.05/0.05	0.01	5%	Cultivated fungi	0/0	0.01
4%	Cranberries	0/0	0.00	5%	Anise/aniseed	0.05/0.05	0.01
4%	Parsley roots/Hamburg roots	0/0	0.00	5%	Anise/aniseed	0.05/0.05	0.01
4%	Ginger	0.05/0.05	0.00	5%	Anise/aniseed	0.05/0.05	0.01

Expand/collapse list

Total number of commodities exceeding the ARfD/ADI in children and adult diets (IESTI calculation) #N/A

Processed commodities

Results for children
No of processed commodities for which ARfD/ADI is exceeded (IESTI): 4

IESTI

Highest % of ARfD/ADI	Processed commodities	MRL/input for RA (mg/kg)	Exposure (µg/kg bw)
151%	Ginger/jam	0.05/0.05	0.15
116%	Maize/oil	0.01/0.13	0.12
110%	Sugar beets (root)/sugar	0/0.01	0.11
105%	Oranges/juice	0/0	0.11
94%	Coffee beans/extraction	0.05/0.01	0.09
93%	Potatoes/fried	0/0	0.09
89%	Pumpkins/boiled	0/0	0.09
89%	Witloofs/boiled	0/0	0.09
86%	Coconuts/drink	0.01/0.01	0.09
81%	Lentils/boiled	0.01/0.01	0.08
79%	Broccoli/boiled	0/0	0.08
71%	Peas/canned	0.01/0	0.07
70%	Cauliflowers/boiled	0/0	0.07
66%	Escaroles/broad-leaved endiv	0/0	0.07
60%	Wheat/milling (flour)	0.01/0.01	0.06

Expand/collapse list

Results for adults
No of processed commodities for which ARfD/ADI is exceeded (IESTI): 1

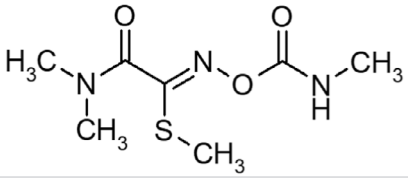
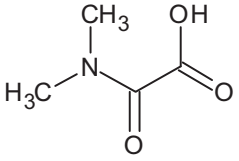
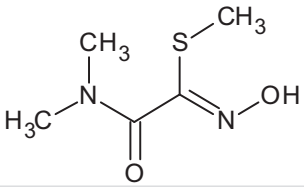
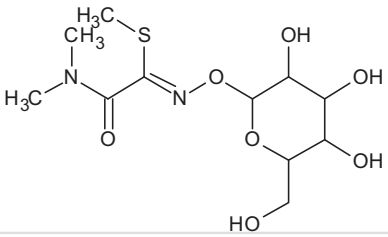
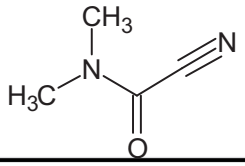
IESTI

Highest % of ARfD/ADI	Processed commodities	MRL/input for RA (mg/kg)	Exposure (µg/kg bw)
238%	Coffee beans/extraction	0.05/0.01	0.24
72%	Beans/canned	0.01/0.01	0.07
63%	Maize/oil	0.01/0.13	0.06
63%	Ginger/jam	0.05/0.05	0.06
55%	Pumpkins/boiled	0/0	0.06
44%	Sugar beets (root)/sugar	0/0.01	0.04
42%	Cauliflowers/boiled	0/0	0.04
39%	Beetroots/boiled	0/0	0.04
38%	Carob (st johns bread)/flour	0.05/0.05	0.04
36%	Coconuts/drink	0.01/0.01	0.04
36%	Barley/beer	0.01/0	0.04
34%	Cocoa (fermented beans)/	0.05/0	0.03
34%	Celeries/boiled	0/0	0.03
33%	Apples/juice	0/0	0.03
30%	Oranges/juice	0/0	0.03

Conclusion:
#N/A

For processed commodities, the toxicological reference value was exceeded in one or several cases.

Appendix D – Used compound codes

Code/trivial name[a]	IUPAC name/SMILES notation/InChiKey[b]	Structural formula[c]
Oxamyl	methyl (*EZ*)-2-(dimethylamino)-*N*-[(methylcarbamoyl) oxy]-2-oxothioacetimidate KZAUOCCYDRDERY-UHFFFAOYSA-N O=C(C(=N\OC(=O)NC)/SC)N(C)C	
IN-D2708	(dimethylamino)(oxo)acetic acid CN(C)C(=O)C(=O)O YKFGLGXRUVEMNF-UHFFFAOYSA-N	
IN-A2213	methyl (1*Z*)-2-(dimethylamino)-*N*-hydroxy-2-oxoethanimidothioate CN(C)C(=O)C(=N\O)\SC KIDWGGCIROEJJW-XQRVVYSFSA-N	
IN-QKT34 (IN-A2213 glucoside)	1-*O*-{(*Z*)-[2-(dimethylamino)-1-(methylsulfanyl)-2-oxoethylidene]amino}hexopyranose CN(C)C(=O)C(=N\OC1OC(CO)C(O)C(O)C1O)\SC BVJZJNMSARVECQ-XFXZXTDPSA-N	
IN-N0079	[(cyanocarbonyl)azanediyl]dimethane CN(C)C(=O)C#N DNRRZLQWEDPRRM-UHFFFAOYSA-N	

IUPAC: International Union of Pure and Applied Chemistry; SMILES: simplified molecular-input line-entry system; InChiKey: International Chemical Identifier Key.
(a): The metabolite name in bold is the name used in the conclusion.
(b): ACD/Name 2021.1.3 ACD/Labs 2021.1.3 (File Version N15E41, Build 123,232, 7 July 2021).
(c): ACD/ChemSketch 2021.1.3 ACD/Labs 2021.1.3 (File Version C25H41, Build 123,835, 28 August 2021).