CODEX ALIMENTARIUS COMMISSION

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Food and Agriculture Organization of the United Nations

World Health Organization

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**CL 2025/48-PR/RVDF**
**December 2025**

**TO:** Codex Contact Points
Contact Points of international organizations having observer status with Codex

**FROM:** Secretariat, Codex Alimentarius Commission,
Joint FAO/WHO Food Standards Programme

**SUBJECT:** Request for comments on harmonizing Codex maximum residue limits for dual-use compounds

**DEADLINE:** **10 February 2026**

**BACKGROUND**

1. Based on the recommendations of the 25th Session of the Codex Committee on Residues of Veterinary Drugs in Foods (CCRVDF25, 2021)[1], the 52nd Session of the Codex Committee on Pesticide Residues (CCPR52; 2021)[2], and the 81st Session of the Codex Executive Committee (CCEXEC81, 2021)[3], the 44th Session of Codex Alimentarius Commission (CAC44, 2021)[4] agreed to establish a Joint CCPR/CCRVDF Electronic Working Group (EWG) chaired by the United States of America (USA), to address procedural and technical issues related to the establishment of harmonized maximum residue limits (MRLs) for compounds with dual use (i.e. as pesticides and veterinary drugs) to establish, when possible, single MRLs for such compounds to protect consumer health and ensure fair trade..

2. Following work on the definition for edible offal in CCRVDF, CCPR53 (2022) agreed on harmonized definitions for edible offal and other edible tissues of animal origin (i.e. fat, meat/muscle). This includes the portion of the commodity to which the MRL applies, and which is analyzed for the specified commodities. This harmonization aims to facilitate discussions in the Joint EWG on issues of common relevance for dual-use compounds and ultimately the establishment of single MRLs for such compounds by CCPR and CCRVDF.

3. These definitions are now fully harmonized and available in the revised *Classification of food and feed* (CXA 4-1989, Class B - Primary Food Commodities of Animal Origin) developed by CCPR and in the *Glossary of terms and definitions* - Residues of Veterinary Drugs in Foods (CXA 5-1993) developed by CCRVDF. Consequently, from 2024 onwards, the Joint FAO/WHO Meeting on Pesticide Residues (JMPR)[5] has no longer recommended MRLs for pesticides in meat but in muscle, in line with the Joint FAO/WHO Expert Meeting on Food Additives (JECFA) when recommending MRLs for veterinary drugs in muscle tissue.[6]

4. The Joint EWG made initial recommendations to CCRVDF26 (2023)[7] and CCPR54 (2023)[8]. Both committees agreed to continue the Joint EWG and recommended the following new terms of reference (ToRs) that CAC46 (2023)[9] subsequently endorsed, including the appointment of the United States of America (USA) as Chair of the EWG and Brazil and New Zealand as Co-Chairs:

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1 REP21/RVDF25, paras. 44, 106-116, 140-150
2 REP21/PR52, paras. 12, 180-185
3 REP21/EXEC81, paras. 33-34
4 REP21/CAC44, paras. 64-66
5 Report of the JMPR Meeting 2024, Chapter 2, General Considerations, Section 2.4 Transition from commodity of meat to commodity of muscle and fat:
https://openknowledge.fao.org/handle/20.500.14283/CD5918EN
https://doi.org/10.4060/cd5918en
https://www.who.int/groups/joint-fao-who-meeting-on-pesticide-residues-(jmpr)
6 REP22/PR53, paras. 179-190
7 REP23/RVDF26, paras. 103-130
8 REP23/PR54, paras. 36-37, 210-219
9 REP23/CAC46, para. 106

- **ToR #1:** Continue the Joint EWG, chaired by the United States and co-chaired by Brazil and New Zealand, to identify and prioritize issues affecting both committees, recommend ways to address them, and inform CAC accordingly.
- **ToR #2:** Develop a list of compounds with dual use as a pesticide and veterinary drug for which no or only one Codex MRL has been established, with member countries providing the information to populate this list.
- **ToR #3:** Identify dual-use compounds that have different Codex MRLs for a similar edible commodity of animal origin and recommend a single, harmonized MRL(s) for the compound(s) and affected commodity(ies) on a case-by-case basis. The EWG might recommend that CCRVDF/CCPR consider selecting the higher MRL value.
- **ToR #4:** Consider the matter related to harmonized food descriptors to be used by JECFA and JMPR.

5. The Joint EWG provided a status of work update to CCPR55 (2024)[10] and CCRVDF27 (2024)[11]. Both Committees indicated their continued support for the EWG and agreed to explore the possibility of a virtual session of the Joint EWG and possibly a virtual Joint session of CCPR and CCRVDF to address the current terms of reference.

6. Although the Joint EWG has made progress, the Chair and co-Chairs have found that the operating exclusively within the Codex online forum, followed by recommendations being presented to each committee separately, might not be the most effective approach to reach consensus on substantial issues (*e.g.* MRL harmonization and food descriptor harmonization, see CL 2025/47-PR/RVDF). Therefore, in consultation with the Codex Secretariat, the Chair and co-Chairs are using other communication tools, such as a Circular Letter, to obtain feedback from members.

7. The feedback provided by Codex members and observers will be reviewed and assessed by the Joint CCPR/CCRVDF EWG with a view towards advancing work on dual-use compounds.

**REQUEST FOR COMMENTS**

8. Based on the data and information presented in the Annex, Codex members and observers are invited to provide comments on the recommendations on the harmonization of MRLs for dual-use compounds, and in particular on Recommendations 1 to 7 related to the definition for dual-use compounds, the proposed procedure for harmonization of MRLs for dual-use compounds, and the harmonized MRL derived through the proposed procedure, as follows:

(i) whether the procedure proposed to harmonize MRLs for dual-use compounds is based on a sufficient scientific basis and therefore is agreeable, and if so, whether the harmonized MRL that arises from that calculation is supported, otherwise

(ii) provide for revisions to the proposed procedure or alternative procedure(s) and corresponding derived MRLs that will arise with such revised or alternative procedure, including the technical/scientific basis in support of such revised or alternative procedure.

> **Note**: Agreement on harmonized MRLs for dual-use compounds to address veterinary and pesticide uses by applying a single harmonized MRL will imply the subsequent revocation of existing single MRLs for pesticide and veterinary drugs for the given compound in the respective databases for MRLs for pesticides and veterinary drugs and their replacement by the single harmonized MRL in both databases.

(iii) Any other relevant comments not covered by the above points.

9. The Annex is uploaded to the Codex Online Commenting System (OCS)[12]. Comments provided through the OCS should follow the guidance in paragraphs 12-16.

10. In submitting comments in reply to this CL, Codex members and observers are also invited to consider the request for comments in CL 2025/47-PR/CCRVDF on harmonization of food descriptors for commodities of animal origin used by CCPR and CCRVDF.

11. Member countries' Codex Contact Points should coordinate with their veterinary and plant protection agencies to provide joint comments on pesticide and veterinary drug residues from compounds used for dual purposes to allow the Joint EWG to make progress on the issues raised in the Annex.

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10 REP24/PR55, paras. 274-280
11 REP24/RVDF27, paras. 64, paras. 115-124
12 https://ocs.codexalimentarius.org/

**GUIDANCE ON THE PROVISION OF COMMENTS**

12. Comments should be submitted through the Codex Contact Points of Codex members and observers using the OCS.

13. Contact Points of Codex members and observers may login to the OCS and access the document open for comments by selecting “Enter” in the “My reviews” page, available after login to the system.

14. Contact Points of Codex members and observers’ organizations are requested to provide proposed changes and relevant comments/justifications on a specific paragraph (under the categories: editorial, substantive, technical, and translation) and/or at the document level (general comments or summary comments). Additional guidance on the OCS comment categories and types can be found in the OCS Frequently Asked Questions (FAQs)[13].

15. Other OCS resources, including the user manual and short guide, can also be found on the Codex website[14].

16. For questions on the OCS, please contact Codex-OCS@fao.org.

13 http://www.fao.org/fileadmin/user_upload/codexalimentarius/doc/OCS/Codex_OCS_FAQs_2017-11-06.pdf
14 https://www.fao.org/fao-who-codexalimentarius/resources/ocs/en/

**ANNEX**

**IDENTIFICATION AND POSSIBLE HARMONIZATION OF MAXIMUM RESIDUE LIMITS THAT DIFFER FOR DUAL-USE COMPOUNDS IN SIMILAR EDIBLE COMMODITIES OF ANIMAL ORIGIN**

Prepared by the Joint Electronic Working Group
between the Codex Committee on Residues of Veterinary Drugs in Food and
the Codex Committee on Pesticide Residues
(Chaired by the United States of America and Co-chaired by Brazil and New Zealand)

**Executive Summary**

1. The Joint Electronic Working Group (EWG) between the Codex Committee on Residues of Veterinary Drugs in Food (CCRVDF) and Codex Committee on Pesticide Residues (CCPR) is tasked with identifying dual-use compounds that have different Codex maximum residue limits (MRLs) for a similar edible commodity of animal origin and recommending on a case-by-case basis, a single, harmonized MRL(s) for the compound(s) and affected commodity(ies).

2. The EWG proposes the following definition for dual-use compounds for consideration by CCPR and CCRVDF:

> ***Dual-Use Compound:*** *A compound that has at least one registered or approved use by a national authority as a veterinary drug* ***and*** *at least one registered or approved use by a national authority as a pesticide that satisfy the Codex definitions of a veterinary drug and pesticide, respectively.*

3. The EWG identified nine dual-use compounds with Codex MRLs. Of those nine, six had one or more standards that differed depending on whether the compound was evaluated as a veterinary drug or pesticide. From those six compounds, 34 divergent Codex standards were identified.

4. Where divergent MRLs occurred, the higher MRL value was considered as a candidate harmonized value. The acceptability of the higher value was assessed by evaluating its effect on the International Estimated Daily Intake (IEDI), the International Estimate of Short-Term Intake (IESTI), and the Theoretical Maximum Daily Intake (TMDI). If the higher MRL value caused exceedances of the health-based guidance values (HBGVs) established by the Joint FAO/WHO Expert Committee on Food Additives (JECFA)[1] or the Joint FAO/WHO Meeting on Pesticide Residues (JMPR)[2], the EWG proposed seeking advice from JECFA or JMPR. If the higher MRL did not cause any exceedance of the HBVGs established by JECFA or JMPR, the EWG proposed the higher value as the harmonized MRL.

5. The following risk management decisions for the compounds and commodities that currently have divergent Codex standards are proposed for consideration by CCPR55 (2024) and CCRVDF27 (2024).

*Abamectin*

6. Although the acceptable daily intake (ADI) value differed, a risk management recommendation is not needed for abamectin because there are no divergent MRL values in edible commodities of animal origin.

*Cyfluthrin*

7. The EWG proposes that CCPR make the risk management decision to harmonize the cyfluthrin milk MRL with the CCRVDF milk MRL, 40 µg/kg.

*Cyhalothrin*

8. The EWG proposes that CCRVDF ask JECFA to determine whether the JECFA-recommended ADI for cyhalothrin can be harmonized with the JMPR-recommended ADI. This would allow the EWG to recommend that CCRVDF harmonize the existing divergent cyhalothrin MRL values with those of CCPR.

*Cypermethrin*

9. The EWG proposes that CCRVDF make the risk management decision to harmonize the cypermethrin MRLs in fat from cattle, sheep, and all other ruminants with the CCPR fat MRL, 2000 µg/kg.

10. The EWG proposes that CCPR make the risk management decision to harmonize the cypermethrin milk MRL with the CCRVDF milk MRL, 100 µg/kg.

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1 https://www.who.int/groups/joint-fao-who-expert-committee-on-food-additives-(jecfa)/publications
https://www.who.int/groups/joint-fao-who-expert-committee-on-food-additives-(jecfa)/publications/reports

2 https://www.fao.org/pest-and-pesticide-management/guidelines-standards/faowho-joint-meeting-on-pesticide-residues-jmpr/reports/en/

*Deltamethrin*

11. The EWG provides two risk management options to be considered by CCPR and CCRVDF.

Option 1: The EWG recommends the following:

- That CCPR and CCRVF note that harmonizing the CCRVDF milk MRL with the CCPR milk MRL will not change the established Good Veterinary Practices (GVPs) for deltamethrin, or the dietary exposure associated with GVPs originally estimated by JECFA (*i.e.* 265 µg).
- That CCRVDF make the risk management decision to harmonize the deltamethrin cow's milk MRL with the CCPR milk MRL, 50 µg/kg.
- That CCPR make the following risk management decisions:
    - Harmonize the deltamethrin cattle, sheep, and goat kidney and liver MRLs with the CCRVDF kidney and liver MRLs, 50 µg/kg.
    - Harmonize the poultry fat MRL with the CCRVDF chicken fat MRL, 500 µg/kg.
    - Harmonize the egg MRL with CCRVDF chicken egg MRL, 30 µg/kg.
    - Harmonize the poultry edible offal MRL with the CCRVDF chicken kidney and liver MRLs, 50 µg/kg.

Option 2: The EWG proposes that CCPR and CCRVDF ask JECFA whether their previous conclusion on the TMDI for deltamethrin residues associated with GVPs (*i.e.* 265 µg) remains appropriate if CCRVDF harmonizes with the CCPR milk MRL. If the previous JECFA conclusion on the TMDI remains valid, then the EWG proposes that CCPR and CCRVDF harmonize the existing divergent deltamethrin MRLs as described in Option 1.

*Thiabendazole*

12. The EWG proposes that CCRVDF make the risk management decision to harmonize the thiabendazole cattle kidney, liver, and milk MRLs with the CCPR MRLs of 1000 µg/kg, 300 µg/kg, and 200 µg/kg, respectively.

**Background**

13. The 26th Session of the Codex Committee on Residues of Veterinary Drugs in Foods (CCRVDF26, 2023)[3] and the 54th Session of the Codex Committee on Pesticide Residues (CCPR54, 2023)[4] agreed to add the following to the terms of reference established originally by the 44th Session of the Codex Alimentarius Commission (CAC44, 2021)[5] for the Joint EWG between CCPR and CCRVDF (Recommendation #5):

> *Identify dual-use compounds that have different Codex MRLs for a similar edible commodity of animal origin and recommend, on a case-by-case basis, a single, harmonized MRL(s) for the compound(s) and affected commodity(ies). The EWG might recommend that CCRVDF/CCPR consider selecting the higher MRL value.*

14. Considering the higher MRL value as the harmonized value first was recommended by the 1997 Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Core Assessment Group on Pesticide Residues.[6] Also, the *Risk Analysis Principles Applied by the Codex Committee on Pesticide Residues* states,

> "If the recommended maximum residue levels or limits for foods of animal origin resulting from direct treatment of the animal and residues from animal feed do not agree, the higher recommendation will prevail regardless of whether they are recommended by JMPR or the Joint FAO/WHO Expert Committee on Food Additives (JECFA)."[7]

15. The MRLs recommended by JECFA and JMPR are associated with Good Veterinary Practices (GVPs) and Good Agricultural Practices (GAPs), respectively, meaning that the presence of residue concentrations at the MRL is possible when the products are used in accordance with GVPs and GAPs. Consequently, making a risk management decision to harmonize with the lower MRL that is associated with one type of use (*e.g.* pesticide) can inadvertently penalize the other type of legitimate use (*e.g.* veterinary drug).

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3 REP23/RVDF26, paras. 103 - 124
4 REP23/PR54, paras. 210 - 219
5 REP21/CAC44, para. 64
6 Report of the 1997 JMPR Meeting, FAO Plant Production and Protection Paper - 145
7 *Risk Analysis Principles Applied by the Codex Committee on Pesticide Residues*, para 19

16. Both committees discussed the possibility of a JECFA and/or JMPR evaluation of the proposed harmonized MRL values[1,8] However, at CCRVDF26 (2023), the JECFA Secretariat noted that, in cases where there are divergent MRLs for dual-use compounds, both MRL values were health protective as JECFA and JMPR had evaluated them. The JECFA Secretariat noted that asking for an additional risk assessment might be superfluous. The JECFA Secretariat also noted that there are several reasons why MRLs recommended by JECFA and JMPR differ, and it might not be possible for JECFA and JMPR to harmonize those MRLs. Rather than seeking a re-evaluation of the dual-use compounds, the JECFA Secretariat invited the Committees to derive suitable risk management measures as deemed necessary and appropriate.[1]

**Objectives**

17. To this end, the purpose of this discussion paper is to identify dual-use compounds that have different Codex MRLs for a similar edible commodity of animal origin and propose risk management decisions using information from the existing JECFA and JMPR risk assessments. The proposed risk management decisions are to be considered by the 55th Session of CCPR (CCPR55, 2024) and the 27th Session of CCRVDF (CCRVDF27, 2024).

**Definition of Dual-Use Compounds**

18. Currently, there is no Codex definition for dual-use compounds. It is generally understood within the context of veterinary drugs and pesticides that a dual-use compound is one that has at least one registered or approved use by one or more national authorities as a veterinary drug and at least one registered or approved use by one or more national authorities as a pesticide. Therefore, the following is a proposed definition for dual-use compounds:

**RECOMMENDATION 1: DEFINITION FOR DUAL-USE COMPOUND**

> ***Dual-Use Compound:*** *A compound that has at least one registered or approved use by a national authority as a veterinary drug* ***and*** *at least one registered or approved use by a national authority as a pesticide that satisfy the Codex definitions of a veterinary drug and pesticide, respectively.*

**Identification of Dual-Use Compounds with Codex Maximum Residue Limits (MRLs)**

19. A list of pesticides that have Codex MRLs was obtained from the Codex Online Database for Pesticide MRLs.[9] Likewise, a list of veterinary drugs that have Codex MRLs was obtained from the Codex Online Database for Veterinary Drug MRLs.[10] The two lists were cross-referenced to identify those compounds that appear in both lists, and the acceptable daily intake (ADI) and Codex MRL values were obtained for each of these compounds. The ADI and MRL values associated with use as a pesticide were then compared with those associated with use as a veterinary drug, and the type and number of divergent standards (ADI or MRL) were determined. The results are presented in Table 1.

20. In total, nine dual-use compounds with Codex MRLs were identified. Of those nine, six had one or more standards that differed depending on whether the compound was evaluated as a veterinary drug or pesticide. From those six compounds, 34 divergent Codex standards were identified. Each of the six compounds with divergent standards is discussed individually, along with a proposed risk management decision to be considered by CCPR55 (2024) and CCRVDF27 (2024). No conflicts between the acute reference doses (ARfD) were identified because, for the affected compounds, an ARfD was not listed in the CCRVDF database.

8 PR54/CRD08

9 https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/pesticides/de/

10 https://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/vetdrugs/veterinary-drugs/en/

**Table 1. Dual-Use Compounds with Codex MRLs[1] and the Type and Number of Divergent Standards**

| Dual-Use Compounds with Codex MRLs | Divergent Standards | Type of Divergent Standard | Number of Divergent Standards |
|---|---|---|---|
| Abamectin | Yes | ADI[2] | 1 |
| Cyfluthrin | Yes | ADI and MRL | 2 |
| Cyhalothrin | Yes | ADI and MRL | 12 |
| Cypermethrin | Yes | MRL | 4 |
| Deltamethrin | Yes | MRL | 12 |
| Emamectin | No | - | - |
| Lufenuron | No | - | - |
| Teflubenzuron | No | - | - |
| Thiabendazole | Yes | MRL | 3 |
| | | Total | 34 |

[1]MRL, Maximum Residue Limit
[2]ADI, Acceptable Daily Intake

**Retention of Original MRL Values**

21. A virtual meeting of the Joint CCRVDF-CCPR EWG took place prior to CCPR54 (2023). A recommendation was made to retain the original CCRVDF and/or CCPR MRL values for dual-use compounds if the EWG recommends a single harmonized MRL where differences currently exist. The reason for retaining this information is so member countries have the ability to use the original MRL values as part of their national veterinary drug and pesticide registration/approval programs.

*After consultation with the Codex Secretariat, the Secretariat drew attention to TOR#3 of the EWG, which is about the identification of dual-use compounds that have different Codex MRLs for a similar edible commodity of animal origin and to recommend a single, harmonized MRL(s) for the compound(s) and affected commodity(ies) on a case-by-case basis. Therefore, the issue of maintaining existing MRLs for single-use is outside the EWG's mandate. Codex members concerned about this issue could provide comments in response to the CL, including on how, in their view, this could be addressed by Codex.*

**RECOMMENDATION 2: PROPOSED GENERAL PROCEDURE FOR HARMONIZATION OF DUAL-USE COMPOUND**

**General Approach for Harmonization**

23. Where divergent MRLs are identified, the higher value is considered as the candidate for the harmonized value for reasons mentioned previously. To determine the acceptability of harmonizing with the higher value, the effect of the higher value is examined using the existing risk assessment information from JMPR and JECFA.

24. For cases in which CCPR would need to harmonize with the CCRVDF MRL value, the CCRVDF value is used as a worst-case residue value, and its effect on the most recent International Estimated Daily Intake (IEDI) and International Estimate of Short-Term Intake (IESTI) determined by JMPR is assessed. Briefly, the CCRVDF MRL value is used *in lieu* of the supervised trials median residue (STMR) value or high residue (HR) value in the JMPR IEDI and IESTI calculations as worst-case residue value. Examples of these processes are found in Appendix 4 and Appendix 5. The use of JECFA-recommended MRL values in the calculation of the IEDI and IESTI is an approach that JMPR has used previously when assessing a dual-use compound.[11] If the harmonized MRL causes an exceedance of the health-based guidance values (HBGVs) established by JMPR (*i.e.* ADI or ARfD), the EWG will recommend that CCPR seek advice from JMPR.

25. For cases in which CCRVDF would need to harmonize with the CCPR MRL value, the CCPR value is used as a worst-case residue value, and its effect on the most recent Theoretical Maximum Daily Intake (TMDI) determined by JECFA is assessed. Briefly, the CCPR MRL value is used *in lieu* of the CCRVDF MRL value in the JECFA TMDI calculations as a worst-case residue value. An example of this process can be found in Appendix 6. If the harmonized MRL causes an exceedance of the HBGVs established by JECFA (*i.e.* ADI), the EWG will recommend that CCRVDF seek advice from JECFA. Although JECFA no longer uses the TDMI model when recommending MRLs, it is used in this case for two reasons:

11 FAO Plant Production and Protection Paper 172

1. The JECFA evaluation for all compounds in this discussion paper was based on the TMDI model.
2. At CCRVDF26 (2023), the JECFA Secretariat advised a different EWG (*i.e.* Action Levels) to use the TMDI model as an initial tool. Then, if ADI exceedances occurred, CCRVDF could seek additional advice from JECFA.[12]

26. In both cases, this general approach uses the existing JECFA and JMPR risk assessment information as a tool to make risk management recommendations with regard to harmonizing existing MRLs that differ between CCRVDF and CCPR. Moreover, this approach can be seen as an initial risk management tool to determine if advice is needed from JECFA or JMPR.

**Abamectin**

***Acceptable Daily Intake***

27. **Disagreement**: The CCRVDF ADI for abamectin is 2 µg/kg bw, while the CCPR ADI is 1 µg/kg bw.

***Maximum Residue Limits***

28. ***Disagreement****:* There are no disagreements because MRLs in edible commodities of animal origin are only established for the use of abamectin as a veterinary drug.

***Proposed Risk Management Decision***

29. A risk management decision for abamectin is not needed. Although the ADI values differ, there are no conflicting MRL values in edible commodities of animal origin. Therefore, the different ADI values do not lead to divergent MRL values that cause barriers to trade.

**Cyfluthrin**

***Acceptable Daily Intake***

30. ***Disagreement****:* The CCPR ADI for cyfluthrin is higher (Table 2).

***Maximum Residue Limits***

31. ***Disagreement****:* The CCRVDF MRL for cow's milk is higher (Table 2).

**Table 2. Codex Standards for Cyfluthrin Residues in Edible Commodities of Animal Origin Where Conflicts Exist (differences identified in gray)**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Parent Compound:** Cyfluthrin | | | | | | | | |
| **Species:** Cattle | | | | | | | | |
| **ADI Conflict:** Yes | | | | | | | | |
| **Residue Definition Conflict:** No. The JECFA monograph identifies parent cyfluthrin as consisting of four isomers (FAO FNP 41/12). | | | | | | | | |
| **MRL Conflict:** Yes: milk | | | | | | | | |
| | **Acceptable Daily Intake Upper Limit (µg/kg bw)** | **Residue Definition** | **Fat[1,2] (µg/kg)** | **Kidney (µg/kg)** | **Liver (µg/kg)** | **Muscle (µg/kg)** | **Milk[2] (µg/kg)** | **Edible Offal[2] (µg/kg)** |
| **CCRVDF** | 20 | cyfluthrin | 200 | 20 | 20 | 20 | 40 | NA |
| **CCPR** | 40 | cyfluthrin (sum of isomers) | 200 | NA | NA | NA | 10 | 20 |

[1] Listed as "meat (fat)" in the CCPR database
[2] No species designated in the CCPR database
[3] NA, None assigned

[12] REP23/RVDF26, para. 95

***Discussion***

32. The 48th meeting of JECFA (JECFA40)[13] recommended the milk MRL of 40 µg/kg for cyfluthrin. The effect of harmonizing the CCPR milk MRL with the CCRVDF milk MRL on the IEDI (Appendix 1; Table A.1.1) and IESTI (Appendix 2; Table A.2.1) has been assessed using the information from the most current JMPR IEDI and IESTI evaluations of cyfluthrin (2012 JMPR[14]). Descriptions of how the IEDI and IESTI assessments were conducted are presented in Appendix 4 and Appendix 5, respectively.

33. Harmonizing the CCPR milk MRL with the CCRVDF milk MRL resulted in the IEDI utilizing 0.25% to 1.80% of the ADI established by JMPR (Appendix 1; Table A.1.1). The estimated maximum dietary consumption of cyfluthrin residues from veterinary use is 79 µg (JECFA4813). Adding this value to the maximum new total intake value in Table A.1.1 (43.2 µg; Diet B) yields a total daily dietary consumption value of 122.2 µg of cyfluthrin residues resulting from pesticide use and veterinary use if the CCPR milk MRL is harmonized with the CCRVDF milk MRL. This represents 5.09% of the ADI established by JMPR and 10.20% of the ADI established by JECFA. Therefore, harmonizing the CCPR milk MRL with the CCRVDF milk MRL for cyfluthrin will not result in an exposure that exceeds the ADI.

34. Harmonizing the CCPR milk MRL with the CCRVDF milk MRL resulted in the IESTI utilizing a maximum of 10% of the ARfD (Appendix 2; Table A.2.1). Therefore, harmonizing the CCPR milk MRL with the CCRVDF milk MRL for cyfluthrin will not result in an exposure that exceeds the ARfD.

**RECOMMENDATION 3: HARMONIZED MRL FOR CYFLUTHRIN TO ACCOMMODATE PESTICIDE AND VETERINARY DRUG USES**

***Proposed Risk Management Decision***

35. In accordance with the *Risk Analysis Principles Applied by the Codex Committee on Pesticide Residues*, [15] the EWG proposes that CCPR make the risk management decision to harmonize the CCPR cyfluthrin milk MRL with the CCRVDF milk MRL, 40 µg/kg. The EWG also proposes that a note be attached to the harmonized MRL as follows:

> *The Codex MRL for cyfluthrin in milk was developed to align with the milk MRL for veterinary drug use. The harmonized MRL value is an internationally accepted standard that accommodates the use of cyfluthrin as a veterinary drug and pesticide, facilitates international trade, and protects consumer health.*

**Cyhalothrin**

***Acceptable Daily Intake***

36. ***Disagreement****:* The CCPR ADI for cyhalothrin is higher (Table 3).

***Maximum Residue Limits***

37. ***Disagreement****:* The CCPR MRLs for fat, kidney, liver (except sheep), and milk are higher (Table 3).

13 WHO Technical Report Series 879
14 FAO Plant Production and Protection Paper 215
15 *Risk Analysis Principles Applied by the Codex Committee on Pesticide Residues*, para 19

**Table 3. Codex Standards for Cyhalothrin Residues in Edible Commodities of Animal Origin Where Conflicts Exist (differences identified in gray)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Parent Compound:** Cyhalothrin | | | | | | | |
| **Species:** Multiple | | | | | | | |
| **ADI Conflict:** Yes | | | | | | | |
| **Residue Definition Conflict:** No. JECFA54 report states that the marker residue is the sum of the isomers (WHO TRS 900). | | | | | | | |
| **MRL Conflict:** Yes: fat, kidney, liver, and milk | | | | | | | |
| | **Acceptable Daily Intake Upper Limit (µg/kg bw)** | **Residue Definition** | **Fat[1,2] (µg/kg)** | **Kidney (µg/kg)** | **Liver (µg/kg)** | **Muscle (µg/kg)** | **Milk[2] (µg/kg)** |
| **CCRVDF (cattle)** | 5 | cyhalothrin | 400 | 20 | 20 | 20 | 30 |
| **CCPR (cattle)** | 20 | cyhalothrin (sum of isomers) | 3000 | 200 | 50 | NA[3] | 200 |
| **CCRVDF (pigs)** | 5 | cyhalothrin | 400 | 20 | 20 | 20 | NA |
| **CCPR (pigs)** | 20 | cyhalothrin (sum of isomers) | 3000 | 200 | 50 | NA | NA |
| **CCRVDF (sheep)** | 5 | cyhalothrin | 400 | 20 | 50 | 20 | NA |
| **CCPR (sheep)** | 20 | cyhalothrin (sum of isomers) | 3000 | 200 | 50 | NA | 200 |
| **CCRVDF (all other ruminants)** | 5 | cyhalothrin | 400 | 20 | 20 | 20 | 30 |
| **CCPR (all other ruminants, listed as mammals)** | 20 | cyhalothrin (sum of isomers) | 3000 | NA | NA | NA | 200 |

[1] Listed as "meat (fat)" in the CCPR database
[2] No species designated in the CCPR database
[3] NA, None assigned

***Discussion***

38. One risk management option would be for CCRVDF to harmonize the fat, kidney, liver, and milk MRLs with the CCPR MRL values. Table 4 displays the possible harmonized cyhalothrin MRLs for CCRVDF to consider.

39. The effect of harmonizing the CCRVDF MRLs with the CCPR MRLs on the TMDI of cyhalothrin residues was assessed using the most current TMDI information from JECFA54[16]). The results of this assessment are presented in Appendix 3, Table A.3.1, and a description of the assessment that was conducted is presented in Appendix 6.

**Table 4. Possible Harmonized Cyhalothrin MRLs Associated with Veterinary Use**

| **Species** | **Fat (µg/kg)** | **Kidney (µg/kg)** | **Liver (µg/kg)** | **Muscle (µg/kg)** | **Milk (µg/kg)** |
|---|---|---|---|---|---|
| **Cattle** | 3000 | 200 | 50 | 20 | 200 |
| **Pigs** | 3000 | 200 | 50 | 20 | NA[1] |
| **Sheep** | 3000 | 200 | 50 | 20 | NA[2] |
| **All other ruminants** | 3000 | 20 | 20 | 20 | 200 |

[1]NA, None assigned; [2] 200 µg/kg for pesticide use

16 WHO Technical Report Series 900

40. As seen in Appendix 3, Table A.3.1, harmonizing the CCRVDF MRLs with the CCPR MRLs results in the TMDI utilizing 196.44% of the ADI assigned by JECFA. This is likely caused by the JECFA ADI being 4-fold lower than the ADI assigned by JMPR (2007). Indeed, if the JMPR ADI is used instead of the JECFA ADI, the ADI utilization would decrease 4-fold to 49.11%. Therefore, ADI harmonization is needed before MRL harmonization can occur.

**RECOMMENDATION 4: FOLLOW-UP ACTION TO RECOMMEND A HARMONIZED MRL FOR CYHALOTHRIN TO ACCOMMODATE PESTICIDE AND VETERINARY DRUG USES**

***Proposed Risk Management Decision***

41. Based on the results of the TMDI assessment, the EWG cannot propose the harmonized MRL values presented in Table 4 at this time. Instead, the EWG proposes that CCRVDF ask JECFA to determine whether the ADI established by JECFA can be harmonized with the ADI established by JMPR. This would allow the EWG to propose that CCRVDF recommend adoption of the harmonized MRL values in Table 4.

**Cypermethrin**

***Acceptable Daily Intake***

42. ***Disagreement:*** None (Table 5).

***Maximum Residue Limits***

43. ***Disagreement:*** The CCPR MRLs for fat are higher, and the CCRVDF MRL for cow's milk is higher (Table 5).

**Table 5. Codex Standards for Cypermethrin Residues in Edible Commodities of Animal Origin Where Conflict Exists (differences identified in gray)**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Parent Compound:** Cypermethrin | | | | | | | | |
| **Species:** Multiple | | | | | | | | |
| **ADI Conflict:** No | | | | | | | | |
| **Residue Definition Conflict:** No. JECFA62 report states that the marker residue is the sum of the isomers (WHO TRS 925). | | | | | | | | |
| **MRL Conflict:** Yes: fat and milk | | | | | | | | |
| | **Acceptable Daily Intake Upper Limit (µg/kg bw)** | **Residue Definition** | **Fat[1,2] (µg/kg)** | **Kidney (µg/kg)** | **Liver (µg/kg)** | **Muscle (µg/kg)** | **Milk[2] (µg/kg)** | **Edible Offal[2] (µg/kg)** |
| **CCRVDF (cattle)** | 20 | Total of cypermethrin residues | 1000 | 50 | 50 | 50 | 100 | NA[3] |
| **CCPR (cattle)** | 20 | Cypermethrin (sum of isomers) | 2000 | NA | NA | NA | 50 | 50 |
| **CCRVDF (sheep)** | 20 | Total of cypermethrin residues | 1000 | 50 | 50 | 50 | NA | NA |
| **CCPR (sheep)** | 20 | Cypermethrin (sum of isomers) | 2000 | NA | NA | NA | 50 | 50 |
| **CCRVDF (all other ruminants)** | 20 | Total of cypermethrin residues | 1000 | 50 | 50 | 50 | NA | NA |
| **CCPR (all other ruminants, listed as mammals)** | 20 | Cypermethrin (sum of isomers) | 2000 | NA | NA | NA | 50 | 50 |

[1] Listed as "meat (fat)" in the CCPR database
[2] No species designated in the CCPR database
[3] NA, None assigned

***Discussion***

44. The 2011 JMPR[17] recommended the fat MRL of 2000 µg/kg. The effect of harmonizing the CCRVDF fat MRLs with the CCPR fat MRL on the TDMI of cypermethrin residues was assessed using the most recent TMDI information from JECFA62[18]. The effect of harmonization on the TMDI was performed as described in Appendix 6 and is presented in Appendix 3, Table A.3.2. As seen in Appendix 3, Table A.3.2, harmonizing the CCRVDF fat MRLs with the CCPR fat MRL results in the TMDI utilizing 36.07% of the ADI.

45. JECFA6218 recommended the cow's milk MRL of 100 µg/kg. The effect of harmonizing the CCPR milk MRL with the CCRVDF milk MRL on the IEDI and IESTI of cypermethrin residues was assessed using the information from the most current JMPR IEDI and IESTI evaluation of cypermethrin (2011 JMPR17 and 2008 JMPR[19]). The effect of harmonization on the IEDI and IESTI was performed as described in Appendix 4 and Appendix 5, respectively, and is presented in Appendix 1, Table A.1.2 and Appendix 2, Table A.2.2, respectively. As seen in Appendix 1, Table A.1.2 and Appendix 2, Table A.2.2, respectively, harmonizing the CCPR milk MRL with the CCRVDF milk MRL results in 7.82% to 34.33% of the ADI being utilized and 9% of the ARfD being utilized.

46. The total ADI utilization for cypermethrin residues from pesticide use and veterinary drug use resulting from harmonizing the CCRVDF fat MRLs with the CCPR fat MRL and the CCPR milk MRL with the CCRVDF milk MRL is estimated to be a maximum of 70.40% (36.07% from veterinary use + 34.33% from pesticide use).

47. Therefore, harmonizing the CCRVDF fat MRLs with the CCPR fat MRL and the CCPR milk MRL with the CCRVDF milk MRL will not result in an exposure that exceeds the ADI or ARfD for cypermethrin residues.

**RECOMMENDATION 5: HARMONIZED MRL FOR CYPERMETHRIN TO ACCOMMODATE PESTICIDE AND VETERINARY DRUG USES**

***Proposed Risk Management Decisions***

**Recommendation 5.1**: Harmonized MRL for veterinary drugs in fat from cattle, sheep, and all other ruminants, with the MRL for pesticides in fat

48. The EWG proposes that CCRVDF make the risk management decision to harmonize the cypermethrin MRLs in fat from cattle, sheep, and all other ruminants with the CCPR fat MRL, 2000 µg/kg. The EWG also proposes that a note be attached to the harmonized MRL as follows:

> *The Codex MRL for veterinary use for cypermethrin in fat from cattle, sheep, and all other ruminants was developed to harmonize with the fat MRL value associated with pesticide use. The harmonized MRL value is an internationally accepted standard that accommodates the use of cypermethrin as a veterinary drug and pesticide, facilitates international trade, and protects consumer health.*

**Recommendation 5.2**: Harmonized MRL for veterinary drugs in milk with the MRL for pesticides in milk

49. In accordance with the *Risk Analysis Principles Applied by the Codex Committee on Pesticide Residues*, [20] the EWG proposes that CCPR make the risk management decision to harmonize the cypermethrin milk MRL with the CCRVDF milk MRL, 100 µg/kg. The EWG also proposes that a note be attached to the harmonized MRL as follows:

> *The Codex MRL for pesticide use for cypermethrin in milk was developed to harmonize with the milk MRL value associated with veterinary drug use. The harmonized MRL value is an internationally accepted standard that accommodates the use of cypermethrin as a veterinary drug and pesticide, facilitates international trade, and protects consumer health.*

17 FAO Plant Production and Protection Paper 211
18 WHO Technical Report Series 925
19 FAO Plant Production and Protection Paper 193
20 *Risk Analysis Principles Applied by the Codex Committee on Pesticide Residues*, para 19

**Deltamethrin**

***Acceptable Daily Intake***

50. ***Disagreement****:* None (Table 6).

***Maximum Residue Limits***

51. ***Disagreement****:* For cattle, sheep, and all other ruminants, the CCRVDF MRLs for liver and kidney are higher (Table 6). For cow's milk, the CCPR MRL is higher (Table 6). For poultry, the CCRVDF chicken MRLs for fat, eggs, and edible offal (kidney and liver) are higher (Table 6).

**Table 6. Codex Standards for Deltamethrin Residues in Edible Commodities of Animal Origin Where Conflicts Exist (differences identified in gray)**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Parent Compound:** Deltamethrin | | | | | | | | | |
| **Species:** Multiple | | | | | | | | | |
| **ADI Conflict:** No | | | | | | | | | |
| **Residue Definition Conflict:** No. The JECFA monograph reports the method measures cis-deltamethrin, trans-deltamethrin, and α-R-deltamethrin (FAO FNP 41/12) | | | | | | | | | |
| **MRL Conflict:** Yes: fat, kidney, liver, and milk | | | | | | | | | |
| | **Acceptable Daily Intake Upper Limit (µg/kg bw)** | **Residue Definition** | **Fat[1,2] (µg/kg)** | **Kidney (µg/kg)** | **Liver (µg/kg)** | **Muscle (µg/kg)** | **Milk[2] (µg/kg)** | **Eggs (µg/kg)** | **Edible Offal (µg/kg)** |
| **CCRVDF (cattle)** | 10 | deltamethrin | 500 | 50 | 50 | 30 | 30 | NA[3] | NA |
| **CCPR (cattle)** | 10 | Sum of deltamethrin and α-R and trans isomers | 500 | 30 | 30 | NA | 50 | NA | NA |
| **CCRVDF (sheep)** | 10 | deltamethrin | 500 | 50 | 50 | 30 | NA | NA | NA |
| **CCPR (sheep)** | 10 | Sum of deltamethrin and α-R and trans isomers | 500 | 30 | 30 | NA | 50 | NA | NA |
| **CCRVDF (goats, listed as all other ruminants)** | 10 | deltamethrin | 500 | 50 | 50 | 30 | NA | NA | NA |
| **CCPR (goats)** | 10 | Sum of deltamethrin and α-R and trans isomers | 500 | 30 | 30 | NA | 50 | NA | NA |
| **CCRVDF (chicken)** | 10 | deltamethrin | 500 | 50 | 50 | 30 | NA | 30 | NA |
| **CCPR (poultry)** | 10 | Sum of deltamethrin and α-R and trans isomers | 100 | NA | NA | NA | NA | 20 | 20 |

[1] Listed as "meat (fat)" in the CCPR database

[2] No species designated in the CCPR database

[3] NA, None assigned

***Discussion***

52. The 2002 and 2016 JMPR[21,22] recommended the milk MRL of 50 µg/kg. The effect of harmonizing the CCRVDF cow's milk MRL with the CCPR milk MRL on the TDMI of deltamethrin residues was assessed using the most recent TMDI information from JECFA52. The effect of harmonization on the TMDI was performed as described in Appendix 6 and is presented in Appendix 3, Table A.3.3. As seen in Appendix 3, Table A.3.3, harmonizing the CCRVDF cow's milk MRL with the CCPR milk MRL results in the TMDI utilizing 64.39% of the ADI.

53. The JECFA52 and JECFA60[23,24] recommended the kidney and liver MRLs of 50 µg/kg in several species, the chicken fat MRL of 500 µg/kg, and the egg MRL of 30 µg/kg. The effect of harmonizing the CCPR cattle, sheep, and goats kidney and liver MRLs, the CCPR poultry fat MRL, the CCPR poultry edible offal MRL, and the CCPR egg MRL with their corresponding CCRVDF MRLs on the IEDI and IESTI of deltamethrin residues was assessed using the information from the most current JMPR IEDI and IESTI evaluation of deltamethrin (2002 JMPR21 and 2016 JMPR22). The effect of harmonization on the IEDI and IESTI was performed as described in Appendix 4 and Appendix 5, respectively, and is presented in Appendix 1, Table A.1.3 and Appendix 2, Table A.2.3, respectively. Previously, the 2002 JMPR21 used the CCRVDF MRL values in the IESTI evaluation for deltamethrin, except for poultry edible offal. Therefore, this discussion paper only presents an IESTI evaluation for poultry edible offal, because an IESTI evaluation using the CCRVDF MRLs was previously conducted for the other affected commodities. As seen in Appendix 1, Table A.1.3, and Appendix 2, Table A.2.3, and Annex 4 of the 2002 JMPR report21Harmonizing the aforementioned CCPR MRLs with the CCRVDF MRLs results in 12.96% to 48.25% of the ADI being utilized and a maximum of 2% of the ARfD.

54. Considering the maximum ADI utilization from veterinary use (64.39%) and pesticide use (48.25%) resulting from harmonization, the total theoretical maximum ADI utilization could be estimated to be 112.64%. This seemingly might be interpreted to mean that harmonizing the existing divergent MRLs is not protective of consumer health.

55. However, it should be noted that, although Appendix 3, Table A.3.3 includes the dietary intake of deltamethrin residues from milk as a worst-case estimate, the JECFA5223 considered milk to not contribute to the TMDI of deltamethrin residues when GVPs are followed. Moreover, the JECFA6024 estimated that milk would contribute a maximum of 15 µg of deltamethrin residues when GVPs are followed and that the TMDI associated with GVPs is 265 µg, or 44.17% of the ADI. It is also important to consider that harmonizing the CCRVDF milk MRL with the CCPR milk MRL will not change the established GVPs for deltamethrin. As such, harmonization of MRLs will not change the dietary exposure associated with GVPs originally estimated by JECFA (*i.e.*, 265 µg). To this end, CCPR and CCRVDF might consider that harmonizing the deltamethrin MRLs would result in a maximum of 92.42% of the ADI being utilized (44.17% from veterinary use + 48.25% from pesticide use). It follows that harmonizing the existing divergent deltamethrin MRLs will not result in exposure exceeding the ADI or ARfD for deltamethrin residues.

56. Alternatively, CCPR and CCRVDF might consider it appropriate to ask JECFA whether their previous conclusion on the TMDI for deltamethrin residues associated with GVPs (*i.e.* 265 µg) remains valid, given the proposal to harmonize the CCRVDF milk MRL with the CCPR milk MRL.

**RECOMMENDATION 6: HARMONIZED MRL FOR DELTAMETHRIN TO ACCOMMODATE PESTICIDE AND VETERINARY DRUG USES**

***Proposed Risk Management Decisions***

57. The EWG provides two options for risk management decisions to be considered by CCPR and CCRVDF.

***Option 1***

58. The EWG proposes that CCPR and CCRVF note that harmonizing the CCRVDF milk MRL with the CCPR milk MRL will not change the established GVPs for deltamethrin. As such, harmonization of MRLs will not change the dietary exposure associated with GVPs originally estimated by JECFA (*i.e.* 265 µg). To this end, CCPR and CCRVDF would consider that harmonizing the deltamethrin MRLs would result in a maximum of 92.42% of the ADI being utilized (44.17% from veterinary use + 48.25% from pesticide use).

59. The EWG proposes that CCRVDF make the risk management decision to harmonize the deltamethrin cow's milk MRL with the CCPR milk MRL, 50 µg/kg. The EWG also proposes that a note be attached to the harmonized MRL as follows:

21 FAO Plant Production and Protection Paper 172
22 FAO Plant Production and Protection Paper 229
23 WHO Technical Report Series 893
24 WHO Technical Report Series 918

*The Codex MRL for veterinary use for deltamethrin in milk from cattle is presented in CXM 2, and the Codex Veterinary Drug Residue in Food Online Database was developed to harmonize with the milk MRL value associated with pesticide use. The harmonized MRL value is an internationally accepted standard that accommodates the use of deltamethrin as a veterinary drug and pesticide, facilitates international trade, and protects consumer health.*

60. In accordance with the *Risk Analysis Principles Applied by the Codex Committee on Pesticide Residues*,[25] the EWG proposes that CCPR make the following risk management decisions:

- Harmonize the deltamethrin cattle, sheep, and goat kidney and liver MRLs with the CCRVDF kidney and liver MRLs, 50 µg/kg.
- Harmonize the poultry fat MRL with the CCRVDF chicken fat MRL, 500 µg/kg.
- Harmonize the egg MRL with CCRVDF chicken egg MRL, 30 µg/kg.
- Harmonize the poultry edible offal MRL with the CCRVDF chicken kidney and liver MRLs, 50 µg/kg.

61. The EWG also proposes that a note be attached to the harmonized MRL as follows:

*The Codex MRLs for deltamethrin in kidney and liver from cattle, sheep, and goats; in fat from poultry; in egg; and in poultry edible offal were developed to harmonize with the corresponding MRL values associated with veterinary drug use. The harmonized MRL values are internationally accepted standards that accommodate the use of deltamethrin as a veterinary drug and pesticide, facilitate international trade, and protect consumer health.*

***Option 2***

62. The EWG proposes that CCPR and CCRVDF ask JECFA whether their previous conclusion on the TMDI for deltamethrin residues associated with GVPs (*i.e.* 265 µg) remains appropriate if CCRVDF harmonizes with the CCPR milk MRL. If JECFA determines that its previous conclusion on the TMDI remains valid, the EWG proposes that CCPR and CCRVDF harmonize the divergent deltamethrin MRLs as previously described in Option 1.

**Thiabendazole**

***Acceptable Daily Intake***

63. ***Disagreement****:* None (Table 7).

***Maximum Residue Limits***

64. ***Disagreement****:* The CCPR MRLs for cattle kidney, liver, and milk are higher (Table 7).

25 *Risk Analysis Principles Applied by the Codex Committee on Pesticide Residues*, para 19

**Table 7. Codex Standards for Thiabendazole Residues in Edible Commodities of Animal Origin Where Conflicts Exist (differences identified in gray)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Parent Compound:** Thiabendazole | | | | | | | |
| **Species:** Cattle | | | | | | | |
| **ADI Conflict:** No | | | | | | | |
| **Residue Definition Conflict:** No | | | | | | | |
| **MRL Conflict:** Yes: kidney, liver, and milk | | | | | | | |
| | **Acceptable Daily Intake Upper Limit (µg/kg bw)** | **Residue Definition** | **Fat (µg/kg)** | **Kidney (µg/kg)** | **Liver (µg/kg)** | **Muscle[1] (µg/kg)** | **Milk (µg/kg)** |
| **CCRVDF (cattle)** | 100 | Sum of thiabendazole and 5-hydroxythiabendazole | 100 | 100 | 100 | 100 | 100 |
| **CCPR (cattle)** | 100 | Sum of thiabendazole and 5-hydroxythiabendazole | NA[2] | 1000 | 300 | 100 | 200 |

[1] Listed as "meat" in the CCPR database
[2] NA, None assigned

***Discussion***

65. The 2000 JMPR[26] recommended the cattle kidney, liver, and milk MRLs of 1000 µg/kg, 300 µg/kg, and 200 µg/kg. The effect of harmonizing the CCRVDF cattle kidney, liver, and milk MRLs with the CCPR MRLs on the TDMI of thiabendazole residues was assessed using the most current TMDI information from JECFA40 [27]. The effect of harmonization on the TMDI was performed as described in Appendix 6 and is presented in Appendix 3, Table A.3.4. As seen in Appendix 3, Table A.3.4, harmonizing the cattle kidney, liver, and milk MRLs with the CCPR MRLs results in the TMDI utilizing 6.92% of the ADI.

66. The most recent JMPR evaluation of thiabendazole (2019 JMPR[28]) reported that the maximum IEDI associated with pesticide use is 12.00% of the ADI. The total ADI utilization for thiabendazole residues from pesticide use and veterinary drug use resulting from harmonizing the cattle kidney, liver, and milk MRLs with the CCPR MRLs is estimated to be a maximum of 18.92% (6.92% from veterinary use + 12.00% from pesticide use).

67. Therefore, harmonizing the CCRVDF cattle kidney, liver, and milk MRLs with the CCPR MRLs will not result in an exposure that exceeds the ADI for thiabendazole residues.

**RECOMMENDATION 7: HARMONIZED MRL FOR THIABENDAZOLE TO ACCOMMODATE PESTICIDE AND VETERINARY DRUG USES**

***Proposed Risk Management Decisions***

68. The EWG proposes that CCRVDF make the risk management decision to harmonize the thiabendazole cattle kidney, liver, and milk MRLs with the CCPR MRLs of 1000 µg/kg, 300 µg/kg, and 200 µg/kg, respectively. The EWG also proposes that a note be attached to the harmonized MRL as follows:

*The Codex MRLs for veterinary use for thiabendazole in kidney, liver, and milk from cattle were developed to harmonize with the kidney, liver, and milk MRL values associated with pesticide use. The harmonized MRL values are internationally accepted standards that accommodate the use of thiabendazole as a veterinary drug and pesticide, facilitate international trade, and protect consumer health.*

26 FAO Plant Production and Protection Paper 163
27 WHO Technical Report Series 832
28 FAO and WHO. 2019. *Pesticide residues in food 2019 – Report 2019 – Extra Joint FAO/WHO Meeting on Pesticide Residues*. Rome.

**FOR INFORMATION**

**Appendices 1-6 are presented for information to inform comments on Recommendations 1-7**

**Appendix 1**: *Effect of Harmonizing Divergent MRLs on the International Estimated Daily Intake (IEDI) of Residues*

**Table A.1.1. Effect of CCPR Adopting the CCRVDF Cyfluthrin Milk MRL on the International Estimated Daily Intake of Cyfluthrin Residues**

| **CYFLUTHRIN (157)** | | **International Estimated Daily Intake (IEDI)[1]** | | | | | | | | | | | | **ADI = 0–0.04 mg/kg bw** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Codex Code | Commodity | **STMR or STMR-P mg/kg** | Diets: g/person/day | | Intake = daily intake: µg/person | | | | | | | | | |
| | | | **A** | | **B** | | **C** | | **D** | | **E** | | **F** | |
| | | | **diet** | **intake** | **diet** | **intake** | **diet** | **intake** | **diet** | **intake** | **diet** | **intake** | **diet** | **intake** |
| ML 0106 | Milks (Original intake estimate) | 0.004 | 68.8 | 0.3 | 190.6 | 0.8 | 79.4 | 0.3 | 302.6 | 1.2 | 179.6 | 0.7 | 237.9 | 1.0 |
| ML 0106 | **Milks (Intake estimate using CCRVDF MRL)** | **0.04** | 68.8 | **3.0** | 190.6 | **8.0** | 79.4 | **3.0** | 302.6 | **12.0** | 179.6 | **7.0** | 237.9 | **10.0** |

| | | | | | | |
|---|---|---|---|---|---|---|
| Original total intake estimate (µg/person) | 3.2 | 36.0 | 18.7 | 14.4 | 13.8 | 12.7 |
| **Total intake estimate using CCRVDF MRL (µg/person)** | **5.9** | **43.2** | **21.4** | **25.2** | **20.1** | **21.7** |
| Bodyweight per region (kg bw) | 60 | 60 | 60 | 60 | 60 | 60 |
| ADI (µg/person) | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 |
| Original ADI utilization estimate | 0.10% | 1.50% | 0.80% | 0.60% | 0.60% | 0.50% |
| **ADI utilization estimate using CCRVDF MRL** | **0.25%** | **1.80%** | **0.89%** | **1.05%** | **0.84%** | **0.90%** |

[1] Original IEDI information obtained from Annex 4 of the 2012 JMPR report

| CYFLUTHRIN (157) | | International Estimated Daily Intake (IEDI)[1] ADI = 0–0.04 mg/kg bw | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Codex Code | Commodity | STMR or STMR-P mg/kg | Diets: g/person/day Intake = daily intake: µg/person | | | | | | | | | | | | | |
| | | | G | | H | | I | | J | | K | | L | | M | |
| | | | diet | intake | diet | intake | diet | intake | diet | intake | diet | intake | diet | intake | diet | intake |
| ML 0106 | Milks (Original intake estimate) | 0.004 | 66.0 | 0.3 | 121.1 | 0.5 | 81.6 | 0.3 | 102.4 | 0.4 | 207.7 | 0.8 | 57 | 0.2 | 287.9 | 1.2 |
| ML 0106 | **Milks (Intake estimate using CCRVDF MRL)** | **0.04** | 66.0 | **3.0** | 121.1 | **5.0** | 81.6 | **3.0** | 102.4 | **4.0** | 207.7 | **8.0** | 57.0 | **2.0** | 287.9 | **12.0** |
| | Original total intake estimate (µg/person) | | 9.9 | | 27.6 | | 4.3 | | 5.7 | | 34.0 | | 9.2 | | 18.5 | |
| | **Total intake estimate using CCRVDF MRL (µg/person)** | | **12.6** | | **32.1** | | **7.0** | | **9.3** | | **41.2** | | **11.0** | | **29.3** | |
| | Bodyweight per region (kg bw) | | 60 | | 60 | | 60 | | 60 | | 60 | | 60 | | 60 | |
| | ADI (µg/person) | | 2400 | | 2400 | | 2400 | | 2400 | | 2400 | | 2400 | | 2400 | |
| | Original ADI utilization estimate | | 0.50% | | 1.10% | | 0.20% | | 0.20% | | 1.40% | | 0.004 | | 0.80% | |
| | **ADI utilization estimate using CCRVDF MRL** | | **0.53%** | | **1.34%** | | **0.29%** | | **0.39%** | | **1.72%** | | **0.46%** | | **1.22%** | |

**Table A.1.2. Effect of CCPR Adopting the CCRVDF Cypermethrin Milk MRL on the International Estimated Daily Intake of Cypermethrin Residues**

| **CYPERMETHRINS (118)** | | **International Estimated Daily Intake (IEDI)[1]** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Codex Code | Commodity | **STMR or STMR-P mg/kg** | Diets: g/person/day | | Intake = daily intake: µg/person | | | | | | | | | | |
| | | | **A** | | **B** | | **C** | | **D** | | **E** | | **F** | | |
| | | | **diet** | **intake** | **diet** | **intake** | **diet** | **intake** | **diet** | **intake** | **diet** | **intake** | **diet** | **intake** |
| ML 0106 | Milks (Original intake estimate) | 0.011 | 68.8 | 0.8 | 190.6 | 2.1 | 79.4 | 0.9 | 302.6 | 3.3 | 179.6 | 2.0 | 237.9 | 2.6 |
| ML 0106 | **Milks (Intake estimate using CCRVDF MRL)** | **0.1** | 68.8 | **7.3** | 190.6 | **19.1** | 79.4 | **8.2** | 302.6 | **30.0** | 179.6 | **18.2** | 237.9 | **23.6** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Original total intake estimate (µg/person) | 177.3 | 313.0 | 404.7 | 268.4 | 228.1 | 221.1 |
| **Total intake estimate using CCRVDF MRL (µg/person)** | **183.8** | **330.0** | **412.0** | **295.1** | **244.3** | **242.1** |
| Bodyweight per region (kg bw) | 60 | 60 | 60 | 60 | 60 | 60 |
| ADI (µg/person) | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 |
| Original ADI utilization estimate | 14.80% | 26.10% | 33.70% | 22.40% | 19.00% | 18.40% |
| **ADI utilization estimate using CCRVDF MRL** | **15.31%** | **27.50%** | **34.33%** | **24.59%** | **20.36%** | **20.18%** |

[1] Original IEDI information obtained from Annex 4 of the 2011 JMPR report

| CYPERMETHRINS (118) | | International Estimated Daily Intake (IEDI)[1] | | | | | | | | | | | | | | ADI = 0–0.02 mg/kg bw | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Codex Code | Commodity | STMR or STMR-P mg/kg | Diets: g/person/day | | | | | | Intake = daily intake: µg/person | | | | | | | | |
| | | | G | | H | | I | | J | | K | | L | | M | | |
| | | | diet | intake | diet | intake | diet | intake | diet | intake | diet | intake | diet | intake | diet | intake | |
| ML 0106 | Milks (Original intake estimate) | 0.011 | 66.0 | 0.7 | 121.1 | 1.3 | 81.6 | 0.9 | 102.4 | 1.1 | 207.7 | 2.3 | 57.0 | 0.6 | 287.9 | 3.2 | |
| ML 0106 | **Milks (Intake estimate using CCRVDF MRL)** | **0.1** | 66.0 | **6.4** | 121.1 | **11.8** | 81.6 | **8.2** | 102.4 | **10.0** | 207.7 | **20.9** | 57.0 | **5.5** | 287.9 | **29.1** | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Original total intake estimate (µg/person) | 329.6 | 171.7 | 86.5 | 95.3 | 239.8 | 331.3 | 203.9 |
| **Total intake estimate using CCRVDF MRL (µg/person)** | **335.3** | **182.2** | **93.8** | **104.2** | **258.4** | **336.2** | **229.8** |
| Bodyweight per region (kg bw) | 55 | 60 | 60 | 60 | 60 | 55 | 60 |
| ADI (µg/person) | 1100 | 1200 | 1200 | 1200 | 1200 | 1100 | 1200 |
| Original ADI utilization estimate | 30.00% | 14.30% | 7.20% | 7.90% | 20.00% | 30.1 | 17.00% |
| **ADI utilization estimate using CCRVDF MRL** | **30.48%** | **15.18%** | **7.82%** | **8.68%** | **21.53%** | **30.56%** | **19.15%** |

**Table A.1.3. Effect of CCPR Adopting the CCRVDF Deltamethrin Cattle, Sheep, and Goat Kidney and Liver, Chicken Fat, Chicken Kidney and Liver, and Egg MRLs on the International Estimated Daily Intake of Deltamethrin Residues**

| **Deltamethrin (135)** | | **International Estimated Daily Intake (IEDI)[1]** | | | | | | | | | | | | **ADI = 0 - 0.01 mg/kg bw** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Codex Code | Commodity | **STMR or STMR-P mg/kg** | Diets: g/person/day | | Intake = daily intake: µg/person | | | | | | | | | |
| | | | **G01** | | **G02** | | **G03** | | **G04** | | **G05** | | **G06** | |
| | | | **diet** | **intake** | **diet** | **intake** | **diet** | **intake** | **diet** | **intake** | **diet** | **intake** | **diet** | **intake** |
| MO 0105 | Edible offal (mammalian) (Original intake estimate) | 0.03 | 4.79 | 0.14 | 9.68 | 0.29 | 2.97 | 0.09 | 5.49 | 0.16 | 3.84 | 0.12 | 5.03 | 0.15 |
| MO 0105 | **Edible offal (mammalian) (Intake estimate using CCRVDF liver and kidney MRL)** | **0.05** | 4.79 | **0.23** | 9.68 | **0.48** | 2.97 | **0.15** | 5.49 | **0.27** | 3.84 | **0.20** | 5.03 | **0.25** |
| PM 0110 | Poultry meat, raw (incl prepared) - 10% as fat (Original intake estimate) | 0.04 | 1.46 | 0.06 | 2.98 | 0.11 | 0.80 | 0.03 | 12.97 | 0.49 | 2.50 | 0.10 | 3.57 | 0.14 |
| PM 0110 | **Poultry meat, raw (incl prepared) - 10% as fat Intake estimate using CCRVDF fat MRL)** | **0.50** | 1.46 | **0.79** | 2.98 | **1.45** | 0.80 | **0.39** | 12.97 | **6.45** | 2.50 | **1.32** | 3.57 | **1.84** |
| PO 0111 | Poultry edible offal (Original intake estimate) | 0.02 | 0.12 | 0.00 | 0.12 | 0.00 | 0.11 | 0.00 | 5.37 | 0.11 | 0.24 | 0.00 | 0.10 | 0.00 |
| PO 0111 | **Poultry edible offal (Intake estimate using CCRVDF liver and kidney MRL)** | **0.05** | 0.12 | **0.00** | 0.12 | **0.00** | 0.11 | **0.00** | 5.37 | **0.28** | 0.24 | **0.00** | 0.10 | **0.00** |
| PE 0112 | Eggs (Original intake estimate) | 0.02 | 7.84 | 0.16 | 23.08 | 0.46 | 2.88 | 0.06 | 14.89 | 0.30 | 9.81 | 0.20 | 14.83 | 0.30 |
| PE 0112 | **Eggs (Intake estimate using CCRVDF MRL)** | **0.03** | 7.84 | **0.24** | 23.08 | **0.69** | 2.88 | **0.09** | 14.89 | **0.45** | 9.81 | **0.30** | 14.83 | **0.45** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Original total intake estimate (µg/person) | 179.9 | 211.9 | 128.6 | 248.0 | 171.5 | 245.3 |
| **Total intake estimate using CCRVDF MRL (µg/person)** | **180.8** | **213.7** | **129.1** | **254.4** | **172.9** | **247.3** |
| Bodyweight per region (kg bw) | 60 | 60 | 60 | 60 | 60 | 60 |
| ADI (µg/person) | 600 | 600 | 600 | 600 | 600 | 600 |
| Original ADI utilization estimate | 30.00% | 35.30% | 21.40% | 41.30% | 28.60% | 40.90% |
| **ADI utilization estimate using CCRVDF MRL** | **30.13%** | **35.61%** | **21.51%** | **42.40%** | **28.82%** | **41.21%** |

[1] Original IEDI information obtained from Annex 3 of the 2016 JMPR report

[2] Not reported in the 2016 JMPR report

**Table A.1.3 (continued). Effect of CCPR Adopting the CCRVDF Deltamethrin Cattle, Sheep, and Goat Kidney and Liver, Chicken Fat, Chicken Kidney and Liver, and Egg MRLs on the International Estimated Daily Intake of Deltamethrin Residues**

| Deltamethrin (135) | | International Estimated Daily Intake (IEDI)[1] | | | | | | | ADI = 0 - 0.01 mg/kg bw | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Codex Code | Commodity | STMR or STMR-P mg/kg | Diets: g/person/day | | Intake = daily intake: µg/person | | | | | | | | | |
| | | | G07 | | G08 | | G09 | | G10 | | G11 | | G12 | |
| | | | diet | intake | diet | intake | diet | intake | diet | intake | diet | intake | diet | intake |
| MO 0105 | Edible offal (mammalian) (Original intake estimate) | 0.03 | 15.17 | 0.46 | 5.19 | 0.16 | 6.30 | 0.19 | 6.78 | 0.20 | 3.32 | 0.10 | 3.17 | 0.10 |
| MO 0105 | **Edible offal (mammalian) (Intake estimate using CCRVDF liver and kidney MRL)** | **0.05** | 15.17 | **0.77** | 5.19 | **0.27** | 6.30 | **0.32** | 6.78 | **0.33** | 3.32 | **0.17** | 3.17 | **0.17** |
| PM 0110 | Poultry meat, raw (incl prepared) - 10% as fat (Original intake estimate) | 0.04 | 7.38 | 0.28 | 5.39 | 0.20 | 2.40 | 0.09 | 8.71 | 0.33 | 5.34 | 0.20 | 8.45 | 0.32 |
| PM 0110 | **Poultry meat, raw (incl prepared) - 10% as fat (Intake estimate using CCRVDF fat MRL)** | **0.50** | 7.38 | **3.68** | 5.39 | **2.63** | 2.40 | **1.18** | 8.71 | **4.34** | 5.34 | **2.63** | 8.45 | **4.21** |
| PO 0111 | Poultry edible offal (Original intake estimate) | 0.02 | 0.33 | 0.01 | 0.72 | 0.01 | 0.27 | 0.01 | 0.35 | 0.01 | 0.80 | 0.02 | NR[2] | |
| PO 0111 | **Poultry edible offal (Intake estimate using CCRVDF liver and kidney MRL)** | **0.05** | 0.33 | **0.03** | 0.72 | **0.03** | 0.27 | **0.03** | 0.35 | **0.03** | 0.80 | **0.05** | NR | |
| PE 0112 | Eggs (Original intake estimate) | 0.02 | 25.84 | 0.52 | 29.53 | 0.59 | 28.05 | 0.56 | 33.19 | 0.66 | 36.44 | 0.73 | 8.89 | 0.18 |
| PE 0112 | **Eggs (Intake estimate using CCRVDF MRL)** | **0.03** | 25.84 | **0.78** | 29.53 | **0.89** | 28.05 | **0.84** | 33.19 | **0.99** | 36.44 | **1.10** | 8.89 | **0.27** |

| | G07 | G08 | G09 | G10 | G11 | G12 |
|---|---|---|---|---|---|---|
| Original total intake estimate (µg/person) | 207.7 | 241.8 | 119.3 | 285.0 | 258.1 | 188.8 |
| **Total intake estimate using CCRVDF MRL (µg/person)** | **211.7** | **244.6** | **120.8** | **289.5** | **261.0** | **192.8** |
| Bodyweight per region (kg bw) | 60 | 60 | 55 | 60 | 60 | 60 |
| ADI (µg/person) | 600 | 600 | 550 | 600 | 600 | 600 |
| Original ADI utilization estimate | 34.60% | 40.30% | 21.70% | 47.50% | 43.00% | 31.50% |
| **ADI utilization estimate using CCRVDF MRL** | **35.28%** | **40.77%** | **21.97%** | **48.25%** | **43.50%** | **32.14%** |

[1] Original IEDI information obtained from Annex 3 of the 2016 JMPR report

[2] Not reported in the 2016 JMPR report

**Table A.1.3 (continued). Effect of CCPR Adopting the CCRVDF Deltamethrin Cattle, Sheep, and Goat Kidney and Liver, Chicken Fat, Chicken Kidney and Liver, and Egg MRLs on the International Estimated Daily Intake of Deltamethrin Residues**

| Deltamethrin (135) | | International Estimated Daily Intake (IEDI)[1] | | | | | | | | | ADI = 0 - 0.01 mg/kg bw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Codex Code | Commodity | STMR or STMR-P mg/kg | Diets: g/person/day | | Intake = daily intake: µg/person | | | | | | |
| | | | G13 | | G14 | | G15 | | G16 | | G18 | |
| | | | diet | intake | diet | intake | diet | intake | diet | intake | diet | intake |
| MO 0105 | Edible offal (mammalian) (Original intake estimate) | 0.03 | 4.64 | 0.14 | 1.97 | 0.06 | 10.01 | 0.30 | 3.27 | 0.10 | 3.98 | 0.12 |
| MO 0105 | **Edible offal (mammalian) (Intake estimate using CCRVDF liver and kidney MRL)** | **0.05** | 4.64 | **0.23** | 1.97 | **0.10** | 10.01 | **0.50** | 3.27 | **0.17** | 3.98 | **0.20** |
| PM 0110 | Poultry meat, raw (incl prepared) - 10% as fat (Original intake estimate) | 0.04 | 0.39 | 0.01 | 1.20 | 0.05 | 5.71 | 0.22 | 0.50 | 0.02 | 5.56 | 0.21 |
| PM 0110 | **Poultry meat, raw (incl prepared) - 10% as fat Intake estimate using CCRVDF fat MRL)** | **0.50** | 0.39 | **0.13** | 1.20 | **0.66** | 5.71 | **2.89** | 0.50 | **0.26** | 5.56 | **2.76** |
| PO 0111 | Poultry edible offal (Original intake estimate) | 0.02 | 0.10 | 0.00 | 0.70 | 0.01 | 0.97 | 0.02 | 0.10 | 0.00 | NR[2] | |
| PO 0111 | **Poultry edible offal (Intake estimate using CCRVDF liver and kidney MRL)** | **0.05** | 0.10 | **0.00** | 0.70 | **0.03** | 0.97 | **0.05** | 0.10 | **0.00** | NR | |
| PE 0112 | Eggs (Original intake estimate) | 0.02 | 3.84 | 0.08 | 4.41 | 0.09 | 27.25 | 0.55 | 1.13 | 0.02 | 7.39 | 0.15 |
| PE 0112 | **Eggs (Intake estimate using CCRVDF MRL)** | **0.03** | 3.84 | **0.12** | 4.41 | **0.14** | 27.25 | **0.83** | 1.13 | **0.03** | 7.39 | **0.23** |

| | G13 | G14 | G15 | G16 | G18 |
|---|---|---|---|---|---|
| Original total intake estimate (µg/person) | 213.4 | 76.9 | 230.1 | 145.5 | 99.0 |
| **Total intake estimate using CCRVDF MRL (µg/person)** | **213.7** | **77.6** | **233.3** | **145.8** | **101.7** |
| Bodyweight per region (kg bw) | 60 | 60 | 60 | 60 | 60 |
| ADI (µg/person) | 600 | 600 | 600 | 600 | 600 |
| Original ADI utilization estimate | 35.60% | 12.80% | 38.40% | 24.20% | 16.50% |
| **ADI utilization estimate using CCRVDF MRL** | **35.61%** | **12.93%** | **38.88%** | **24.30%** | **16.95%** |

[1] Original IEDI information obtained from Annex 3 of the 2016 JMPR report

[2] Not reported in the 2016 JMPR report

**Appendix 2**: *Effect of Harmonizing Divergent MRLs on the International Estimate of Short-Term Intake (IESTI) of Residues*

**Table A.2.1. Effect of CCPR Adopting the CCRVDF Cyfluthrin Milk MRL on the International Estimate of Short-Term Intake of Cyfluthrin Residues**

| CYFLUTHRIN (157) | | | International Estimate of Short-Term Intake (IESTI)[1] | | | | | | | | | | Acute RfD = 0.040 mg/kg bw (40 µg/kg bw) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Mixed population groups | | | | | | | all-mixed | children | gen pop |
| Codex Code | Commodity | Processing | STMR or STMR-P mg/kg | HR or HR-P mg/kg | diet corr fact | Country | Population group | n | Large portion, g/person | Unit weight, edible portion, g | Variability factor | Case | % acute RfD rounded | % acute RfD rounded | % acute RfD rounded |
| ML 0106 | Milks (Original intake estimate) | Total | 0.004 | | 1.000 | AU | Child, 2–6 yrs. | 2923 | 1933.6 | NR[2] | NR | 3 | 1% | 1% | 0% |
| ML 0106 | **Milks (Intake estimate using CCRVDF MRL)** | Total | **0.040** | | 1.000 | AU | Child, 2–6 yrs. | 2923 | 1933.6 | NR | NR | 3 | **10%** | **10%** | **10%** |

[1] Original IESTI information obtained from Annex 4 of the 2012 JMPR report;

[2] NR, not reported

**Table A.2.2. Effect of CCPR Adopting the CCRVDF Cypermethrin Milk MRL on the International Estimate of Short-Term Intake of Cypermethrin Residues**

| CYPERMETHRIN (118) | | International Estimate of Short-Term Intake (IESTI)[1] | | | | | | | | Acute RfD = 0.040 mg/kg bw (40 µg/kg bw) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Codex Code | Commodity | Processing | STMR or STMR-P mg/kg | HR or HR-P mg/kg | diet corr fact | Country | Population group | n | Large portion, g/person | Unit weight, edible portion, g | Variability factor | Case | % acute RfD rounded |
| ML 0106 | Milks (Original intake estimate) | NR[2] | 0.011 | | NR | USA | NR | NR | 2466.0 | NR | NR | 3 | 1% |
| ML 0106 | **Milks (Intake estimate using CCRVDF MRL)** | NR | **0.100** | | NR | USA | NR | NR | 2466.0 | NR | NR | 3 | **9%** |

[1] Original IESTI information obtained from Annex 4 of the 2008 JMPR report

[2] NR, not reported

**Table A.2.3. Effect of CCPR Adopting the CCRVDF Deltamethrin Chicken Kidney and Liver MRL on the International Estimate of Short-Term Intake of Deltamethrin Residues**

| DELTAMETHRIN (157) | | International Estimate of Short-Term Intake (IESTI)[1] | | | | Acute RfD = 0.050 mg/kg bw (40 µg/kg bw) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Codex Code** | **Commodity** | **STMR or STMR-P mg/kg** | **HR or HR-P mg/kg** | **Country** | **Population group** | **Large portion, g/person** | **Unit weight, edible portion, g** | **Variability factor** | **Case** | **% acute RfD rounded** |
| PO 0110 | Poultry, edible offal of (Original intake estimate) | | 0.03 | USA | General population | 248.0 | NR[2] | NR | 1 | 0% |
| PO 0110 | **Poultry, edible offal of (Intake estimate using CCRVDF liver and kidney MRL)** | | **0.05** | USA | General population | 248.0 | NR | NR | 1 | **2%** |
| PO 0110 | Poultry, edible offal of (Original intake estimate) | | 0.03 | USA | Children up to 6 years | 37.0 | NR | NR | 1 | 0% |
| PO 0110 | **Poultry, edible offal of (Intake estimate using CCRVDF liver and kidney MRL)** | | **0.05** | USA | Children up to 6 years | 37.0 | NR | NR | 1 | **2%** |

[1] Original IESTI information obtained from Annex 4 of the 2002 JMPR report

[2] NR, not reported

**Appendix 3**: *Effect of Harmonizing Divergent MRLs on the Theoretical Maximum Daily Intake (TMDI) of Residues*

**Table A.3.1. Effect of CCRVDF Adopting the CCPR Cyhalothrin Fat, Kidney, Liver, and Milk MRLs on the Theoretical Maximum Daily Intake of Cyhalothrin Residues**

| CYHALOTHRIN | Theoretical Maximum Daily Intake (TMDI)[1] | | | ADI (µg/kg bw) = | 5 |
|---|---|---|---|---|---|
| **Species: Cattle, sheep, pigs, all other ruminants** | **Residue Definition: Cyhalothrin** | | | | |
| **Tissue** | **MRL value (µg/kg)** | **Marker:Total** | **Tissue consumption (kg)** | **Estimate of total residues (µg/kg)** | **Theoretical maximum daily intake (µg)** |
| Fat (original) | 400 | 1 | 0.05 | 400.00 | 20.00 |
| **Fat (intake estimate using CCPR MRL)** | **3000** | 1 | 0.05 | **3000.00** | **150.00** |
| Kidney (original) | 20 | 0.2 | 0.05 | 100.00 | 5.00 |
| **Kidney (intake estimate using CCPR MRL)** | **200** | 0.2 | 0.05 | **1000.00** | **50.00** |
| Liver (original) [2] | 50 | 0.06 | 0.1 | 833.33 | 83.33 |
| **Liver (intake estimate using CCPR MRL)** | **50** | 0.06 | 0.1 | **833.33** | **83.33** |
| Muscle (original) | 20 | 1 | 0.3 | 20.00 | 6.00 |
| Milk (original) [3] | 30 | 1 | 1.5 | 30.00 | 45.00 |
| **Milk (intake estimate using CCPR MRL)** | **200** | 1 | 1.5 | **200.00** | **300.00** |
| | | | | | |
| ADI 60 kg person (µg/day) | | | | | 300.00 |
| Original total daily intake (µg) | | | | | 159.33 |
| Original ADI utilization estimate | | | | | 53.11% |
| **Total daily intake using CCPR MRLs (µg)** | | | | | **589.33** |
| **ADI utilization estimate using CCPR MRLs** | | | | | **196.44%** |

[1] Original TMDI information obtained from JECFA54 report (WHO TRS 900)

[2] The original liver MRL of 50 µg/kg only applies to sheep. The original liver MRL for cattle and all other ruminants is 20 µg/kg. The MRL value of 50 µg/kg is used as a worst-case exposure estimate.

[3] The MRLs for milk only apply to cattle and all other ruminants.

**Table A.3.2. Effect of CCRVDF Adopting the CCPR Cypermethrin Fat MRL on the Theoretical Maximum Daily Intake of Cypermethrin Residues**

| CYPERMETHRIN | Theoretical Maximum Daily Intake (TMDI)[1] | | | ADI (µg/kg bw) = | 20 |
|---|---|---|---|---|---|
| **Species: Cattle, sheep, all other ruminants** | **Residue Definition: Cypermethrin** | | | | |
| **Tissue** | **MRL value (µg/kg)** | **Marker:Total** | **Tissue consumption (kg)** | **Estimate of total residues (µg/kg)** | **Theoretical maximum daily intake (µg)** |
| Fat (original) | 1000 | 0.8 | 0.05 | 1250.00 | 62.50 |
| **Fat (intake estimate using CCPR MRL)** | **2000** | 0.8 | 0.05 | **2500.00** | **125.00** |
| Kidney (original) | 50 | 0.05 | 0.05 | 1000.00 | 50.00 |
| Liver (original) | 50 | 0.1 | 0.1 | 500.00 | 50.00 |
| Muscle (original) | 50 | 0.3 | 0.3 | 166.67 | 50.00 |
| Milk (original) [2] | 100 | 0.95 | 1.5 | 105.26 | 157.89 |
| | | | | | |
| ADI 60 kg person (µg/day) | | | | | 1200.00 |
| Original total daily intake (µg) | | | | | 370.39 |
| Original ADI utilization estimate | | | | | 30.87% |
| **Total daily intake using CCPR MRLs (µg)** | | | | | **432.89** |
| **ADI utilization estimate using CCPR MRLs** | | | | | **36.07%** |

[1] Original TMDI information obtained from the JECFA monograph (FAO Food and Nutrition Paper 41/16)

[2] The MRL for milk only applies to cattle

**Table A.3.3. Effect of CCRVDF Adopting the CCPR Deltamethrin Milk MRL on the Theoretical Maximum Daily Intake of Deltamethrin Residues**

| DELTAMETHRIN | Theoretical Maximum Daily Intake (TMDI)[1] | | | ADI (µg/kg bw) = 10 | |
|---|---|---|---|---|---|
| **Species: Cattle** | **Residue Definition: Deltamethrin** | | | | |
| **Tissue** | **MRL value (µg/kg)** | **Marker:Total** | **Tissue consumption (kg)** | **Estimate of total residues (µg/kg)** | **Theoretical maximum daily intake (µg)** |
| Fat (original) | 500 | 0.6 | 0.05 | 833.33 | 41.67 |
| Kidney (original) | 50 | 0.03 | 0.05 | 1666.67 | 83.33 |
| Liver (original) | 50 | 0.04 | 0.1 | 1250.00 | 125.00 |
| Muscle (original)[2] | 30 | - | 0.3 | - | - |
| Milk (original)[2,3] | 30 | 0.55 | 1.5 | 54.55 | 81.82 |
| **Milk (intake estimate using CCPR MRL)[3]** | **50** | 0.55 | 1.5 | **90.91** | **136.36** |
| Eggs (original)[2] | 30 | - | 0.1 | - | - |
| | | | | | |
| ADI 60 kg person (µg/day) | | | | | 600.00 |
| Original total daily intake (µg) | | | | | 331.82 |
| Original ADI utilization estimate | | | | | 55.30% |
| **Total daily intake using CCPR MRLs (µg)** | | | | | **386.36** |
| **ADI utilization estimate using CCPR MRLs** | | | | | **64.39%** |

[1] Original TMDI information obtained from JECFA52 report (WHO TRS 893)

[2] The CCRVDF MRLs are based on the sensitivity of the method, and JECFA did not consider them to contribute to the TMDI (JECFA52, WHO TRS 893).

[3] Although JECFA did not consider milk to contribute to the TMDI, the lowest marker:total ratio reported for milk in the JECFA monograph is used as a worst-case exposure estimate to evaluate the effect of using the JMPR MRL value for milk (FAO Food and Nutrition Paper 41/12 ).

**Table A.3.4. Effect of CCRVDF Adopting the CCPR Cattle Kidney, Liver and Milk MRLs on the Theoretical Maximum Daily Intake of Thiabendazole Residues**

| **THIABENDAZOLE** | **Theoretical Maximum Daily Intake (TMDI)[1]** | | **ADI (µg/kg bw) =** | **100** | |
|---|---|---|---|---|---|
| **Species: Cattle** | **Residue Definition: Sum of thiabendazole and 5-hydroxythiabendazole** | | | | |
| **Tissue** | **MRL value (µg/kg)** | **Marker:Total** | **Tissue consumption (kg)** | **Estimate of total residues (µg/kg)** | **Theoretical maximum daily intake (µg)** |
| Fat (original) | 100 | 1 | 0.05 | 100 | 5.00 |
| Kidney (original) | 100 | 1 | 0.05 | 100 | 5.00 |
| **Kidney (intake estimate using CCPR MRL)** | **1000** | 1 | 0.05 | **1000** | **50.00** |
| Liver (original) | 100 | 1 | 0.1 | 100 | 10.00 |
| **Liver (intake estimate using CCPR MRL)** | **300** | 1 | 0.1 | **300** | **30.00** |
| Muscle (original) | 100 | 1 | 0.3 | 100 | 30.00 |
| Milk (original) | 100 | 1 | 1.5 | 100 | 150.00 |
| **Milk (intake estimate using CCPR MRL)** | **200** | 1 | 1.5 | **200** | **300.00** |
| | | | | | |
| ADI 60 kg person (µg/day) | | | | | 6000.00 |
| Original total daily intake (µg) | | | | | 200.00 |
| Original ADI utilization estimate | | | | | 3.33% |
| **Total daily intake using CCPR MRLs (µg)** | | | | | **415.00** |
| **ADI utilization estimate using CCPR MRLs** | | | | | **6.92%** |

[1] Original TMDI information obtained from JECFA40 report (WHO TRS 832)

**Appendix 4**: *Estimating the Effect of MRL Harmonization on the International Estimated Daily Intake of Cyfluthrin Residues*

1. The effect of harmonizing the CCPR milk MRL with the CCRVDF milk MRL on the IEDI of cyfluthrin residues was assessed as follows.

*Step 1*

2. The CCRVDF milk MRL value (40 µg/kg = 0.04 mg/kg) was used as a worst-case exposure value instead of the cyfluthrin supervised trials median residue (STMR) value (0.004 mg/kg) to estimate the dietary intake of cyfluthrin residues originating from milk for each of the 13 GEMS/Food cluster diets. An example calculation is provided for Diet A.

$$\text{New milk residue intake estimate} = \frac{\text{CCRVDF MRL}}{\text{STMR}} \times \text{original milk residue intake estimate}$$

For Diet A:
CCRVDF MRL = 0.04 mg/kg
STMR = 0.004 mg/kg
Original milk residue intake estimate = 0.3 µg/day

$$\text{New milk residue intake estimate} = \frac{0.04\ (\text{mg/kg})}{0.004\ (\text{mg/kg})} \times 0.3\ \mu\text{g/person/day} = 3.0\ \mu\text{g/person/day}$$

*Step 2*

3. For each of the 13 GEMS/Food Cluster Diets, the new dietary intake estimates for milk calculated in Step 1 were used to calculate the total intake estimate for cyfluthrin residues. An example calculation is provided for Diet A.

$$\text{New total intake} = (\text{original total intake} - \text{original milk residue intake estimate}) + \text{new milk residue intake estimate}$$

For Diet A:
Original total intake = 3.2 µg/person
Original milk residue intake estimate = 0.3 µg/person
New milk residue intake estimate = 3.0 µg/person

$$\text{New total intake} = (3.2\ \mu\text{g/person} - 0.3\ \mu\text{g/person}) + 3.0\ \mu\text{g/person} = 5.9\ \mu\text{g/person}$$

*Step 3*

4. For each of the 13 GEMS/Food Cluster Diets, the new total intake values for cyfluthrin residues were used to determine the percentage of ADI utilization associated with pesticide use and harmonizing the CCPR milk MRL with the CCRVDF milk MRL. An example calculation is provided for Diet A.

$$\text{ADI utilization} = \frac{\text{new total intake}}{\text{ADI}} \times 100$$

For Diet A:
New total intake = 5.9 µg/person
ADI = 2400 µg/person

$$\text{ADI utilization} = \frac{5.9\ \mu\text{g/person}}{2400\ \mu\text{g/person}} = 0.25\%$$

**Appendix 5**: *Estimating the Effect of MRL Harmonization on the International Estimate of Short-Term Intake of Cyfluthrin Residues*

1. The effect of harmonizing the CCPR milk MRL with the CCRVDF milk MRL on the IESTI of cyfluthrin residues was assessed as follows.

2. The CCRVDF milk MRL value (40 µg/kg = 0.04 mg/kg) was used as a worst-case exposure value instead of the cyfluthrin residue value (supervised trials median residue (STMR) value or high residue (HR) value; 0.004 mg/kg) to estimate the percent utilization of the acute reference dose (ARfD) by cyfluthrin residues originating from milk. An example calculation is provided for the mixed population.

$$\text{New ARfD utilization} = \frac{\text{CCRVDF MRL}}{\text{STMR}} \times \text{original ARfD utilization}$$

For the mixed population:
CCRVDF MRL = 0.04 mg/kg
STMR = 0.004 mg/kg
Original ARfD utilization = 1%

$$\text{New ARfD utilization} = \frac{0.04 \text{ mg/kg}}{0.004 \text{ mg/kg}} \times 1\% = 10\%$$

**Appendix 6**: *Estimating the Effect of MRL Harmonization on the Theoretical Maximum Daily Intake of Cyhalothrin Residues*

1. The effect of harmonizing the CCRVDF fat, kidney, liver, and milk MRLs with the CCPR MRLs on the TMDI of cyhalothrin residues was assessed as follows.

*Step 1*

2. The CCPR MRL values for fat, kidney, liver, and milk were used as a worst-case exposure value instead of the current CCRVD MRL values to estimate the TMDI values for each tissue. An example calculation is provided for fat.

$$\text{New fat TMDI value} = \frac{\text{CCPR fat MRL}}{\text{fat marker:total ratio}} \times \text{fat consumption value}$$

For Fat:
CCPR MRL = 3000 µg/kg
Fat marker:total ratio = 1
Fat consumption value = 0.05 kg

$$\text{New fat TMDI value} = \frac{3000\ \mu g/kg}{1} \times 0.05\ kg = 150.0\ \mu g$$

*Step 2*

3. The new TMDI values (*i.e.* fat, kidney, liver, and milk) were summed with the unchanged original TMDI values (*i.e.* muscle) to yield a new total daily intake value for cyhalothrin residues.

New fat TMDI value = 150.0 µg
New kidney TMDI value = 50.0 µg
New liver TMDI value = 83.33 µg
New milk TMDI value = 300.0 µg
Original muscle TMDI value = 6.0 µg

New total daily intake = 150.0 µg + 50.0 µg + 83.33 µg + 300.0 µg + 6.0 µg = 589.3 µg

*Step 3*

4. The new total daily intake value was used to determine the percentage of ADI utilization that would be associated with veterinary use and harmonizing with the CCPR MRLs for fat, kidney, liver, and milk.

$$\text{ADI utilization} = \frac{\text{new total daily intake}}{\text{ADI for 60 kg person}} \times 100$$

New total daily intake = 589.33 µg
ADI for 60 kg person = 300.0 µg

$$\text{ADI utilization} = \frac{589.33\ \mu g}{300.0\ \mu g} \times 100 = 196.44\%$$