Opinion of the Scientific Committee on Plants regarding questions relating to amending the annexes to Council Directives 86/362/EEC, 86/363/EEC and 90/642/EEC (Opinion expressed by the Scientific Committee on Plants, 14 July 1998)

1. Title

Draft Commission Directive amending the Annexes to Council Directives 86/362/EEC, 86/363/EEC and 90/642/EEC on the fixing of maximum levels for pesticide residues in and on cereals, foodstuffs of animal origin and certain products of plant origin, including fruit and vegetables respectively.

2. Terms of reference

The Scientific Committee on Plants is asked to consider the following questions

1. General question relating to the proposed maximum residue limits (MRLs)

1.1 Do the draft maximum pesticide residue limits (MRLs) ensure adequate long-term dietary protection for all sections of the population including infants and young children?

2. Methamidophos - short-term dietary intake

2.1 What is the maximum toxicologically acceptable residue level which could be established for methamidophos in pome fruit, peaches and peppers?

3. Dithiocarbamate group of fungicides

3.1 Is it scientifically justifiable to include ziram in the dithiocarbamate intake calculations when ziram uses have not been taken into account in determining the MRLs and ziram is not included in the residue definition?

3.2 If it is justifiable, should the authorisations for the use of ziram on pome fruit and tomatoes be withdrawn on the basis of national dietary intake calculation exceeding theziram ADI, in advance of the regulatory outcome of the authorisation review currently underway?

3.3 If it is not justifiable, should the authorisation/MRL position of ziram be fully reassessed, together with that of each of the other seven dithiocarbamates, when the authorisation review of all eight has been further progressed?

3. Background

The draft Directive under examination amends the Annexes to the Council Directives 86/362/EEC on cereals, 86/363/EEC on foodstuffs of animal origin and 90/642/EEC on fruit and vegetables. The motivation for these amendments is the completion of the harmonisation process started under Directives 93/57/EEC and 93/58/EEC.

The active substances involved are the following: acephate, benomyl group (benomyl, carbendazim, thiophanate-methyl), chlorothalonil, chlorpyrifos, chlorpyrifos-methyl, cypermethrin, deltamethrin, fenvalerate/esfenvalerate, glyphosate, imazalil, iprodion, permethrin, maneb group (maneb, mancozeb, metiram, propineb, zineb), methamidophos, procymidone, vinclozolin.

The Working Group of the Standing Committee on Plant Health has examined the submitted GAP (Good Agricultural Practice) and supervised field trial data on the basis of evaluations and recommendations by the Member States rapporteurs. The results of this examination have formed the basis of the proposed MRLs.

In addition, the long term dietary exposures of consumers have been assessed and evaluated in accordance with the "Guidelines for predicting dietary intake of pesticide residues (revised), WHO 1997" (Ref. 1). Where applicable, the acute dietary exposures of consumers have also been assessed. However, the risk assessment methodology recommended by a FAO/WHO Consultation in 1997 (Ref. 2) was not yet published at that time.

4. Assessment

A majority opinion has been adopted by the Committee. However, it has to be noted according to Article 10 of the Commission Decision of 23 July 1997 setting up Scientific Committees in the field of consumer health and food safety (97/579/EC) that Prof. M. Maroni expressed a minority opinion which is attached at the end of this document.

Question 1: General question relating to the proposed maximum residue limits (MRLs)

1.1 Do the draft maximum pesticide residue limits (MRLs) ensure adequate long-term dietary protection for all sections of the population including infants and young children?

Answer

The **long-term dietary exposure** of consumers has been calculated in accordance with the Â„Guidelines for predicting dietary intake of pesticide residues (revised)", published by WHO 1997 (Ref. 1).

The Committee was supplied with intake calculations for adults using the WHO European regional diet, for young children using the German 4-6 year old girl model, and for infants using the UK model.

The Committee did not have access to the full toxicological data packages but accepted the ADIs as estimated by the FAO/WHO JMPR.

The results of the TMDI (Theoretical Maximum Daily Intake) and /or IEDI resp. NEDI (International resp. National Estimated Daily Intake) calculations do not give reason for objection.

Considering all the factors for refining estimates of residue levels for predicting long-term dietary exposure recommended by the WHO 1997 (Ref. 1) and that were only taken into account in fact the results of the submitted TMDI/IEDI/NEDI calculations are clearly an overestimate of the true pesticide residue intake. Therefore, the Committee agreed that infants

and young children would be adequate protected by the draft maximum pesticide residue limits on the basis of the submitted intake calculations.

The Committee recommended that for future MRL proposals the SCP are supplied with the best estimate of dietary intake using all available factors (especially STMRs and processing factors) for refining estimates.

The Committee intends to return to this subject of European consumer risk assessment methodology in more detail in the near future.

Question 2 Methamidophos - Short-term dietary intake

2.1 What is the maximum toxicologically acceptable residue level which could be established for methamidophos in pome fruit, peaches and peppers?

Answer

The Committee wishes to emphasise that the estimation of acute (short-term) dietary intake and the establishment of Acute Reference Doses (ARfD) is a relatively new development for which the full detailed methodology had still not been fully elaborated.

Nevertheless the Committee agreed that the methodology recommended by the **Joint FAO/WHO Consultation on food consumption and intake assessment of chemicals,** WHO 1997 (Ref. 2) may be used as a basis for estimating acute (short-term) dietary intake.

It was also agreed, that in the absence of other relevant consumption data, the UK portion size (97.5th percentile consumption data for adults and young children) and typical commodity size data could be used (UK 1998, Ref. 3).

The FAO/WHO Consultation recognised that the combined consumption of two different commodities each in large portion weights and of more than one commodity containing a high level variable residue by an individual consumer in a short period of time is not likely. The Scientific Committee on Plants agreed with this approach and therefore considered the acute (short-term) dietary intake for each commodity separately in accordance with the recommendation of the Consultation for non-probabilistic short-term dietary intake estimates.

Because the residues in an individual commodity unit can be significantly higher than the level in the composite samples due to the much greater distribution of residue levels among the units within composite samples the FAO/WHO Consultation recommended to incorporate a variability factor n : this factor reflects the ratio of the highest level of residue in the individual commodity unit to the corresponding residue level seen in the composite sample. At present little data are available to establish specific variability factors: therefore the FAO/WHO Consultation recommended default values of 5 for large crops resp. 10 for medium crops.

The Committee has not been presented with the necessary data to estimate an Acute Reference Dose (ARfD) for methamidophos. In this circumstance the Committee noted that 0.004 mg/kg bw could be used as ARfD, based on the toxicological data summarised in the 1990 JMPR Monograph (Ref. 4), and derived from the NOAEL in a short-term study in humans with a safety factor of 10.

On the basis of an acute dietary intake assessment (according to the FAO/WHO Consultation approach) using a default variability factor of 10 and the above mentioned ARfD the Committee noted that the new estimated MRLs based on the GAP for pome fruit, peaches and peppers may be toxicologically unacceptable. While recognising that the calculation with the default factor of 10 is an overestimate, the Committee noted that these MRLs might still be a cause for concern even with lower variability particularly for young children.

The Committee calculated that the **maximum toxicologically acceptable residue level (in the composite sample)** could be 0.05 mg/kg for pome fruit and peaches (including nectarines and similar hybrids) and 0.1 mg/kg for peppers.

The Committee also noted that the methamidophos dietary intake arising from the new estimated MRL for apricots may also be above the ARfD when a variability factor of 10 is applied and that in this case the **maximum toxicologically acceptable residue level (in the composite sample**) could be 0.15 mg/kg.

The Committee wishes to draw attention that no maximum residue limits (MRLs) could be estimated because supervised field trial and GAP information were not available.

Whereas, the methodology for estimation of acute (short-term) dietary intake and the establishment of ARfDs had still not been fully elaborated, the Committee recommended that an ARfD should be derived and all MRLs for methamidophos be reassessed in context of the ongoing authorisation review under Directive 91/414/EEC.

The Committee agreed that in considering the short-term dietary intake from residues of methamidophos, that the MRLs of acephate should also be reconsidered, since residues of methamidophos also arise from use of acephate.

Question 3 Dithiocarbamate group of fungicides

This question based on the fact that in the dithiocarbamate group for which MRLs were established in the Directives 93/57/EEC and 93/58/EEC only ethylenbis(dithiocarbamate) and propylenbis(dithiocarbamate) compounds were included.

Ziram belongs to the bis(dimethyldithiocarbamate)s and registered uses for citrus, pome fruit, stone fruit and almonds exist.

The analytical method for ziram residues relies on acid hydrolysis to release CS_2 which can be measured by different methods; these methods are the same as for other dithiocarbamates. At present no specific method of analysis for ziram is available.

3.1 Is it scientifically justifiable to include ziram in the dithiocarbamate intake calculations when ziram uses have not been taken into account in determining the MRLs and ziram is not included in the residue definition?

Answer

The Committee noted that the 1997 JMPR (Ref. 5) considered dithiocarbamates as being comprised of two distinct groups, namely those that were toxic to the thyroid and those that were not.

Ziram falls into the latter group as well as thiram and ferbam. The JMPR concluded that their toxicity was similar enough for them to be considered together, but that this group was distinct from the other group of dithiocarbamates since the toxic end-point upon which their ADIs are based is not associated with thyroid toxicity.

Therefore, the WHO performed a separate intake calculation and risk assessment for ziram/ thiram (Ref. 6).

The JMPR approach and the WHO intake calculation for ziram/thiram were presented to the 30th Session of the Codex Committee on Pesticide Residues (CCPR) 1998. The CCPR had agreed, in principle, with the approach but requested WHO to prepare a more detailed explanation for its next session (Ref. 7).

The Scientific Committee on Plants did not have access to the full toxicological data package but agreed that this approach recently recommended by the JMPR could be an appropriate basis for dealing with the risk assessment for the dithiocarbamate group.

Consequently, the Committee concluded that it is not appropriate to include ziram in the intake calculation and risk assessment for the new estimated MRLs.

3.2 If it is justifiable, should the authorisations for the use of ziram on pome fruit and tomatoes be withdrawn on the basis of national dietary intake calculation exceeding the ziram ADI, in advance of the regulatory outcome of the authorisation review currently underway?

3.3 If it is not justifiable, should the authorisation/MRL position of ziram be fully reassessed, together with that of each of the other seven dithiocarbamates, when the authorisation review of all eight has been further progressed?

Answer to 3.2 and 3.3

With reference to question 3.1 and its assessment the Committee agreed that the MRLs for all dithiocarbamates (including ziram) should be reassessed in the context of the authorisation review under the Directive 91/414/EEC and that revised risk assessments be carried out in accordance with the JMPRs recommendation on dealing with the dithiocarbamate group referred to above.

5. Summary and recommendations

- (i) The Committee is of the opinion that on the basis of the submitted intake calculation with regard to the long-term dietary exposure of consumers all sections of the population including infants and young children would be adequate protected by the draft maximum pesticide residue limits.
- (ii) The Committee recommended that for future MRL proposals the SCP are supplied with the best estimate of dietary intake using all available factors (especially STMRs and processing factors) for refining estimates.
- (iii) The Committee noted with regard to the acute (short-term) dietary intake on the basis of an assessment according to the FAO/WHO Consultation approach using a default variability factor of 10 and an assumed ARfD of 0.004 mg/kg bw the new estimated MRLs for methamidophos based on the GAP for pome fruit, peaches,

apricots and peppers may be toxicologically unacceptable, particularly for young children.

- (iv) Whereas, the methodology for estimation of acute (short-term) dietary intake and the establishment of Acute Reference Doses had still not been fully elaborated, the Committee recommended that an ARfD should be derived and all MRLs for methamidophos be reassessed in context of the ongoing authorisation review under Directive 91/414/EEC.
- (v) The Committee noted the approach recently recommended by the FAO/WHO JMPR to consider the dithiocarbamates as being comprised toxicologically of two distinct groups. The Committee did not have access to the full toxicological data package, but agreed that this approach could be an appropriate basis for dealing with the risk assessment for the dithiocarbamate group. Therefore, the Committee concluded that it is not appropriate to include ziram in the intake calculation and risk assessment for the new estimated MRLs.
- (vi) The Committee agreed that the MRLs for all dithiocarbamates (including ziram) should be reassessed in the context of the authorisation review under Directive 91/414/EEC and that revised risk assessments be carried out in accordance with the FAO/WHO JMPRs recommendation on dealing with the dithiocarbamate group referred to (v).

6. References

- 1. WHO 1997, Guidelines for predicting dietary intake of pesticide residues (revised), prepared by the Global Environment Monitoring System - Food Contamination Monitoring and Assessment Programme (GEMS/Food) in collaboration with Codex Committee on Pesticide Residues, WHO/FSF/FOS/97.7.
- 2. WHO, 1997, Report of a FAO/WHO Consultation entitled, Consultation on food consumption and intake assessment of chemicals. Geneva Switzerland 10 - 14 February 1997. Food Safety Unit. Programme of Food Safety and Food Aid. World Health Organisation 1997; WHO/FSF/FOS. 97.5.
- 3. UK 1998, Technical Policy on the Estimation of Acute Dietary Intakes of Pesticide Residues. AAHL/3/98. 13 January 1998. Available from Pesticides Safety. Directorate, Mallard House, 3 Peasholme Green, York, YO1 2PX.
- 4. WHO, 1990. Pesticide Residues in Food - 1990. Toxicology Evaluations. Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Expert Group on Pesticide Residues: 17 - 26 September 1990. World Health Organisation, Geneva 1991. Page 105 - 117, "Methamidophos".
- 5. FAO, 1997. Pesticide Residues in Food - 1997. Report of the 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; 22 September - 1 October 1997. FAO Plant Production and Protection Paper 145, Rome 1998. Page 16 - 17, Section 3.3, "Assessment of chronic dietary risk of dithiocarbamate pesticides".
- 6. Codex Alimentarius Commission, Document CX/PR 98/5, December 1997.
- 7. Codex Alimentarius Commission, Report of the Thirtieth Session of the Codex Committee on Pesticide Residues, The Hague, 20 - 25 April 1998, Alinorm 99/24.

Acknowledgements

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Dr R Hans (Chairperson), Committee Members Dr M.P. Delcour and Professor A. Silva Fernandes and invited expert Mr S. Crossley.

7. Minority opinion expressed by Prof. M. Maroni

With reference to the opinion adopted by the SCP regarding questions relating to amending the annexes to Council Directives 86/362/EEC, 86/363/EEC and 90/642/EEC, I note the following:

Question 1 and its answer:

The existing "Guidelines for predicting dietary intake of pesticide residues (revised)", published by WHO have been originally developed for use on the general population, without any distinction of age group. Subsequently, the concern that specific age groups such as children and infants could not be adequately protected, also because their diet is significantly different from adult diet, has lead to calculate the intake of residues separately for adults (using the WHO European regional diet), for young children (using the German 4-6 year old girl model) and for infants (using the UK model).

I wish to note that the two procedures above mentioned (the German model and the UK model) have not been evaluated by the SCP nor have been validated for use at European level. Thus we have no base to make conclusions about the adequacy of their use. For this reason, I am not supporting the decision of the SCP on this matter.

Question 2 and its answer:

The SCP has been asked to provide toxicologically acceptable maximum residue levels for methamidophos.

Besides the general objection already raised on the lack of evaluation and discussion of the procedure for setting ARfD, in the case of methamidophos the assessment of the SCP used as starting point for the calculation of the ARfD a NOEL derived from a 21-day oral study in volunteers, ignoring the suggestion of using a more appropriate one-day study in animals made by the RMS. This decision has no scientific justification, as the risk of acute intoxication in a single-day meal cannot be derived by a sub-chronic study with 21-day continuous oral exposure. This unjustified over-protective procedure of assessment leads to indicate unrealistically low ARfD values, probably incompatible with any use of methamidophos. For these reasons I do not support the decision of the SCP on this matter.