codex alimentarius commission

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

WORLD HEALTH ORGANIZATION

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JOINT FAO/WHO FOOD STANDARDS PROGRAMME
CODEX ALIMENTARIUS COMMISSION
Twelfth Session, 1978

REPORT OF THE NINTH SESSION OF THE CODEX COMMITTEE ON PESTICIDE RESIDUES

The Hague
14-21 February 1977

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TABLE OF CONTENTS

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INTRODUCTION

1. The Codex Committee on Pesticide Residues held its ninth session in The Hague, the Netherlands, from 14 to 21 February 1977. Mr. A.J. Pieters, Public Health Officer of the Ministry of Public Health and Environmental Hygiene, Foodstuffs Division, acted as Chairman. The session was attended by government delegates, experts, observers and advisers from the following 43 countries:

Algeria	Ghana	Nigeria
Argentina	Guatemala	Norway
Australia	Hungary	Philippines
Austria	India	Poland
Belgium	Iran	Portugal
Brazil	Ireland	Romania
Canada	Israel	South Africa (observer)
Chile	Italy	Spain
Czechoslovakia	Japan	Sweden
Denmark	Jordan	Switzerland
Egypt	Dem. People's Rep. of Korea	Thailand
Finland	(observer)	Tunisia
France	Rep. of Korea	Turkey
Fed. Rep. of Germany	Netherlands	United Kingdom
	New Zealand	United States of America

The following International Organizations were also represented:

Council of Europe
European Economic Community (EEC)
International Federation of National Associations of Pesticide Manufacturers (GIFAP)
International Organization for Standardization (ISO)
European and Mediterranean Plant Protection Organization (EPPO)
International Union of Pure and Applied Chemistry (IUPAC).

A list of participants, including officers from FAO and WHO, is set out as Appendix I to this Report.

2. The session was opened by a speech of welcome by Dr. J. van Londen, Director General of the Netherlands Ministry of Public Health and Environmental Hygiene. Dr. van Londen pointed out that at the last meeting of the Codex Committee on Pesticide Residues (3-8 March 1975) the date for the next session was described as "probably March 1976". In view of the considerable number of cuts which were made in the number of meetings organized by FAO, the Joint FAO/WHO Food Standards Programme had to play its part by cancelling or postponing a certain number of meetings of the subsidiary bodies of the Codex Alimentarius Commission. In the opinion of Dr. van Londen, a delay in the work of the Committee was contrary to the advice of the ad hoc Government Consultation on Pesticides in Agriculture and Public Health, which was held in Rome in April 1975. This Consultation had emphasized the need to strengthen the personnel and facilities and hence the financial resources available for the preparation of Joint Meetings and work arising therefrom. In this context Dr. van Londen recalled the view of the Codex Alimentarius Commission which, in 1976, had proposed that there should be annual sessions of the Codex Committee on Pesticide Residues and of the Joint Meeting on Pesticide Residues in view of the need for continuity in the activities in this field. In consequence a Joint Meeting was in fact planned for 1977 and the timetable of Codex Alimentarius sessions included a session of the Committee on Pesticide Residues in 1978. Dr. van Londen considered it

significant that once again the Committee welcomed participants from more countries than ever to its session. This provided further evidence of the widespread interest in the work of the Committee and of the recognition of the importance of the responsible use of pesticides in providing adequate supplies of food and their protection against loss from pest attack.

ADOPTION OF THE AGENDA

3. The Committee adopted the agenda in the order proposed with the addition of the following items:

4(e) ad hoc Government Consultation on Pesticides in Agriculture and Public Health; and
4(f) statement by the representative of the Council of Europe on its pesticides work.

APPOINTMENT OF RAPPORTEURS

4. Mr. J.M. Lynes (UK) and Mr. G. Viel (France) were appointed to act as rapporteurs to the Committee.

MATTERS OF INTEREST TO THE COMMITTEE

Report of the 11th session of the Codex Alimentarius Commission

5. The Committee noted that, with the exception of a few items, the proposals for maximum residue limits made at its 8th session, had been adopted by the Commission at its 11th session (ALINORM 76/44, August 1976, paras 18-38, 86-91, 101, 142-161, 389). It also noted that several countries had already accepted recommended Codex maximum limits or were preparing their legislation in order to do so. It was pointed out that when sending their replies to the Commission, member countries should indicate whether they would permit the free circulation of products complying with Codex maximum residue limits. The secretariat announced that a regular information bulletin was being prepared which would inform governments about progress on the acceptance of Codex standards. The 5th Series booklet on recommended Codex maximum limits would be distributed in the near future. The Committee noted the importance which the Commission attached to activities in the field of pesticide residues, a fact which was confirmed by the arrangements for a session of the Joint Meeting in 1977 and a session of the Committee in 1978.

6. The Committee took note of the decisions of the Commission concerning the consideration and evaluation by the Committee of maximum limits for environmental contaminants of a nature similar to pesticide residues such as PCBs and of impurities in pesticides, such as dioxins. Appropriate changes in the terms of reference of the Committee would be prepared by the Executive Committee. Several delegations were of the opinion that to include in its work other contaminants possibly from industrial use, but not resulting from the use of pesticides, would mean a considerable increase in the already heavy workload of both the Joint Meeting on Pesticide Residues and the Committee. After some discussion, the Committee decided to seek further information from the Commission about this proposal but expressed the view that it was not its proper function to consider limits for contaminants which did not result from the use of pesticides.

7. The delegation of Israel suggested a review of the activities and achievements of the Committee with a view to assessing the degree of progress which had been made over the years, especially in respect of acceptances by member countries. It was agreed to include an item of this kind on the agenda of the tenth session of the Committee (see also para 196).

Report of the 1974 Joint FAO/WHO Meeting on Pesticide Residues

8. The delegation of the Netherlands was of the opinion that the report of the Joint Meeting should include an introductory paragraph to indicate clearly that recommendations concerning maximum residue limits were made jointly by FAO and WHO experts. It was pointed out that at the 1976 Joint Meeting this procedure had been followed. The delegation of Canada underlined the importance of Recommendation 3 of

the 1974 Joint Meeting on Pesticide Residues report on the establishment of an international mechanism to generate data on pesticides no longer covered by patent rights.

Report of the 1975 Joint FAO/WHO Meeting on Pesticide Residues

9. With regard to the glossary contained in the report, the Committee was of the opinion that the definition of "conditional acceptable daily intake" was not only of a toxicological nature but also involved the question of usage of a pesticide which was properly a matter for national registration authorities. The WHO representative pointed out that conditional ADIs had been set so far only for DDT, amitrole and HCB, the use of which, in the opinion of the WHO experts, should be restricted. The Joint Meeting was requested to reconsider the usefulness of the concept of a conditional ADI in the light of these comments.

10. The delegation of the Netherlands, referring to their written comments, suggested that the Committee might give further attention to pesticides for which "guideline levels" had been proposed by the Joint Meeting in the absence of an ADI. It was noted that there could be different reasons for not allocating an ADI to a pesticide and it was suggested that the Joint Meeting might report its reasons when no ADIs were established for compounds. The Committee discussed the mechanism for obtaining comments on the proposed guideline levels. Several delegations were reluctant to include guideline levels in the Codex Step Procedure in the absence of an ADI because this could lead to insufficient distinction between two very different types of recommendations. The Committee decided to present proposed guideline levels separately from proposed maximum residue limits and to ask governments to comment on the guideline levels separately and outside the Codex Procedure. The comments received by the Secretariat would be presented to the Joint Meeting and reported to the Committee.

Report of the 1976 Joint FAO/WHO Meeting on Pesticide Residues

11. The Chairman expressed the Committee's thanks to the secretariat for making it possible for the Committee to receive the Joint Meeting's draft report at this early stage. As the report was only distributed shortly before the beginning of the session, it was decided to discuss it in detail at the next session of the Committee. In Annex I the following corrections were noted:

Fenitrothion: rice (milled) should read rice (polished).
Fenthion: reconsideration of the ADI was planned for 1978.
Methamidophos: In the last line a comma should be added after "sheep".
Pirimiphos-methyl: pears and plums, with a recommended maximum residue limit of 2 mg/kg should be added.
Quintozene: the limits were recommended by the 1973 Joint Meeting instead of the 1975 Joint Meeting.

At the request of the Israeli delegation the Committee decided to invite the Joint Meeting to reconsider taking up in the glossary a definition indicating at what stage a maximum residue limit applied, noting that some guidance on this matter was given in the footnote 2 to Annex I in the report of the 1972 Joint Meeting.

Information on the Council of Europe's Work in the Field of Pesticides

12. The Council of Europe representative drew the attention of the Committee to the work of this organization in the field of pesticides. He indicated that the 4th edition of the booklet formerly entitled "Agricultural Pesticides" would appear next year entitled "Pesticides". This change in the name reflected the wider scope of the work, which now included pesticides used in the home, in gardens and kitchens, and in premises where food is produced, treated or stored. On this last item a draft resolution on the safe use of pesticides in food storage had been prepared. The booklet would also contain a new chapter on the disposal of surplus pesticides. Further improvements in the training and provision of information to users of pesticides would be encouraged.

Ad Hoc Consultation on Pesticides in Agriculture

13. The Committee was informed about the results of the ad hoc Government Consultation on Pesticides in Agriculture and Public Health, held in Rome in April 1975. The importance of the work of the Committee and of the Joint Meeting had been stressed in Resolution X of the Consultation. It had not proved possible to resolve the matter of providing data on some of the older pesticides so that they could be properly evaluated, but it seemed that the pesticides industry had indicated its willingness to look into the matter.

14. The Committee was informed that FAO and WHO were planning a conference for October 1977 to discuss the possibility of harmonizing registration procedures for pesticides. The conference would be preceded by a panel of experts which would meet at the end of June 1977.

Classification of Foods in Relation to Codex Maximum Limits for Pesticide Residues

15. The Committee was informed that, on the basis of documents used for earlier sessions of the Committee and taking into consideration comments of governments, R.E. Duggan, FAO Consultant, in collaboration with M.B. Duggan, had prepared an interim report on this subject, entitled "Definition and Classification of Food and Food Groups for the purpose of Codex Tolerances for Pesticide Residues". In view of the interim nature of the report and the closeness of the Committee session, only the original version was distributed. The Committee noted that once finalized, the document, the contents of which was particularly technical from a point of view of terminology, would be translated into the working languages of the Codex Alimentarius Commission.

16. The Chairman introduced the subject, reminding the Committee that classification of foods for the purposes of the Codex was aiming at three objectives:

(1) a uniform nomenclature for individual foods;
(2) definitions for food groups;
(3) definitions of the parts of the food to which the maximum residue limit applied.

The document offered a major contribution to a satisfactory solution of these three problems.

17. Mr. Duggan gave a short description of the main principles of the study which included all foods for which Codex limits had been proposed and other foods of potential interest for pesticide residue control. Classification of foods into commodity groups for common pesticide residue maximum limits involved:

(1) lists of commodities;
(2) identity of each commodity;
(3) rationale for grouping of commodities;
(4) rationale for placement of commodities.

The basic list of food commodities under consideration for Codex tolerances was supplemented with commodities from various large geographical regions. More than 4000 commodities were considered in selecting the 450 plant commodities and more than 100 animal products included in the classification.

18. Mr. Duggan pointed out that commodities were identified by many different names within a country and by even more names among countries. Furthermore, there were a number of similar names describing different commodities. For these reasons common names had to be associated with recognized scientific names. Inconsistencies in terminology had also been noted (i.e. use of different names to describe the same commodity) and lack of qualification. Such qualifications were desirable in commodities such as squash. The terminology used in the above report is based on FAO Bulletin No. 25 - Plants and Plant Products of Economic Importance.

19. Major classification into the two "classes" of plant products and animal products was not difficult. However, there was a need for a category of foods not fitting in this classification. A secondary classification into "types" based on physical characteristics, customary and traditional use, and to a lesser degree on botanical characteristics had been found desirable. However, this classification was too broad for consideration for group maximum residue limits. Nine such "types" of food were included in the classification.

20. Criteria for assignment to "groups" were based on:

(1) potential for residues;
(2) agricultural practices;
(3) consumption patterns;
(4) applications to regulatory requirements.

Processed foods were also covered by the terms of reference, but have not yet been included in this report. The basic listing of raw products was considered a necessary first step.

21. Analytical parameters, given in Chart 1, were considered an important part in the application of tolerances. The Working Group on Analysis was requested to undertake a review of these parameters and to give recommendations to the Committee. The Committee noted that, in considering a classification system for "group" tolerances, there were three primary considerations to be developed:

(1) criteria for minimum data for consideration for a single residue limit for a group of commodities;
(2) probability assurance that the level selected is applicable to all commodities in the group;
(3) provisions for exceptions.

22. The delegations of the Netherlands and the Federal Republic of Germany expressed their appreciation to Mr. Duggan for his excellent work and suggested that detailed comments should be requested after further study of the document.

23. It was pointed out that the classification system proposed would enable computerizing of data, which would not only overcome errors, but would assist in providing the necessary information required by the Committee and governments.

24. The availability of a good classification system would also be of great value in the development of residue data and the evaluation of these data by the Joint Meeting.

25. The Committee decided that comments on the report should be requested from governments, especially concerning the following items:

(1) classes, types and groups of foods;
(2) additional foods to be included;
(3) associations of common and scientific names;
(4) the analytical parameters listed in Chart 1;
(5) which commodities would be appropriate as a key commodity on the basis of which to establish maximum residue limits for a whole group of commodities;
(6) which commodities would not be appropriate for that purpose.

Estimates of Potential Pesticide Residue Intake

26. At the 8th session of the Committee the representative of WHO had been requested to continue to provide information so that recommendations for maximum residue limits could be compared with the figures for acceptable daily intakes published by the Joint Meeting. In the light of the relevant sections in the Joint Meeting's reports of 1975 and 1976, WHO submitted a working paper entitled "Estimate of Potential Pesticide Residue Intake" to the Committee (CX/PR 77/3) which discussed pesticides considered by these sessions of the Joint Meeting.

27. The Committee noted that the method of calculating the "potential daily intakes" was the same as that followed for the previous session. It also noted the conclusion of the 1975 and 1976 Joint Meeting reports that exceeding the ADI in the calculations did not necessarily represent a toxicological problem in view of the assumptions on which the estimates were based.

28. Some delegations were of the opinion that the calculations of potential daily intakes represented a useful approach for identifying those pesticides where further work might be necessary on the actual intake of residues of the compound in question. It also had a useful function by giving an indication of those pesticides where such further information was unlikely to be necessary. Other delegations considered that potential daily intake figures gave a misleading picture of pesticide residue intake and, because of the unrealistic nature of the assumptions, it was not necessarily a useful guide for further work.

29. It was proposed by several delegations and the Committee concurred that the term "potential daily intake" could give a misleading impression of the possibility that the ADIs could be exceeded and proposed that the term should be amended to "theoretical daily intake" or "theoretical potential daily intake".

30. After considerable discussion the Committee noted that the calculation of daily intakes of pesticide residues had become a regular feature in the reports of the Joint Meeting; it recognized its usefulness as part of the theoretical background material in the work of the Joint Meeting. It was further noted that it was the particular responsibility of the Joint Meeting to see to it that no hazards resulted from its proposals. The Committee did not consider that the theoretical intake figures were an appropriate matter for its consideration. It concluded that the Joint Meeting would no doubt give due weight to the conclusions of the exercises in deciding what further studies, if any, were required to determine the actual intake rather than the theoretical intake.

Amendments to Recommended Maximum Limits Proposed by the Joint Meeting

31. The Committee considered some recommendations of the 1975 and 1976 Meetings for amendments to maximum limits for pesticide residues at Step 9 (CX/PR 77/4 and 77/4-Add.1). The Committee noted that at least in part, the recommendations of the Joint Meeting resulted from the request of the Committee to the Joint Meeting to review the maximum limits for certain pesticide residues.

32. Before commenting on this agenda item, several delegations expressed their reservations about the need to issue two versions of the Joint Meeting reports which were identical but were published separately by WHO and FAO. They asked whether it would not be possible to issue only one version of the reports and in particular that this should be done as soon as possible after the meeting. This could result in savings on the cost of publication.

33. The U.K. delegation was joined by several other delegations in asking for a complete list of all recommendations available so far. This would take account of the various additions and amendments that had been made since the appearance of Annex I to the report of the 1972 Joint Meeting which included a full list of the recommendations up to that time.

Lindane - (48.9; 48.11; 48.12) *

34. The Committee agreed that a reduction of the existing maximum limit of 3 mg/kg to 0.5 mg/kg in cherries (48.9), grapes (48.11) and plums (48.12) seemed justified and that these limits should be sent to governments for comment at Step 3.

Quintozene - (64.1) *

35. There was general agreement to the proposed change in the type of limit for quintozene on bananas from a temporary maximum residue limit to a maximum residue limit, in line with the change of the temporary ADI to ADI.

Trichlorfon - (66.10; 66.11; 66.12) *

36. The Committee considered the proposal of the Joint Meeting to change the individual maximum residue limits for wheat (0.2 mg/kg), barley (0.1 mg/kg), and maize (0.1 mg/kg) (except sweet corn) to a general maximum residue limit of 0.1 mg/kg for raw cereals including maize. After some discussions the Committee decided not to adopt this recommendation.

Carbaryl

37. In view of the fact that the 1976 Joint Meeting had only referred to the parent compound and not to its products of degradation, it was decided not to amend the description of the residue.

38. The Committee accepted the suggestion of the 1976 Joint Meeting to add barley, oats, rye and wheat to the item rice (in husk and hulled), on the understanding that these items would appear in Step 3 of the Procedure.

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* The numbering corresponds, as far as possible, to that used in ALINORM 76/24, App. II and CX/PR 77/5.

Fenitrothion

39. As proposed by the Joint Meeting, the description of residues of fenitrothion was amended as follows: fenitrothion and its oxygen analogue, expressed as fenitrothion.

CONSIDERATION OF CODEX MAXIMUM RESIDUE LIMITS

General Statements

40. The Committee had before it a document prepared by the Codex Secretariat (CX/PR 77/5) summarizing all maximum residue limits recommended up to and including the 1975 Joint Meeting and which also included changes proposed by the 1976 Joint Meeting to existing maximum residue limits. The Chairman drew the Committee's attention to the various forms of acceptance of Codex maximum residue limits and also reminded the Committee that it was imperative that governments should provide all available data to substantiate their comments on the maximum residue limits proposed by the Joint Meeting. The Committee decided that, as the 1975 monograph had not yet been issued, the recommendations of the 1975 Joint Meeting should be considered at its 1978 session.

41. The delegation of the USA informed the Committee that the whole question of registration of pesticides and the establishment of maximum residue limits were being reviewed in their country in the light of the Pesticide Law of 1972 as amended in 1975. It was for this reason that the USA had not submitted written comments as requested; this did not in any way signify any lack of interest in the work of the Codex Alimentarius or of the Committee which still received USA's full support. The USA delegation indicated that it was necessary to reserve its position on maximum residue limits being considered at Steps 3 and 6.

42. The delegation of Canada informed the Committee that Canada would attempt to align itself with as many proposed residue limits as possible and undertook to consider carefully whether it could help by carrying out work requested by the Joint Meeting so as to provide necessary information where this was lacking. Acceptance of a Codex maximum residue limit did not necessarily mean that Canada would permit the use of the pesticide in question on its territory.

43. The delegations of Denmark, the Federal Republic of Germany, Austria, Sweden and Switzerland indicated that, whilst accepting the basic principles of the Codex in setting maximum residue limits, they were not in a position to give a clear commitment on the acceptability or otherwise of individual maximum residue limits at this session. This was because their countries were currently reviewing the whole area of maximum residue limits for pesticide residues in food.

44. The delegation of Belgium pointed out that post-harvest treatments might be subject to legislation on preservatives in that country, which required a declaration of the presence of such substances on the label in order to inform the consumer. Other delegations had serious reservations about this approach which could be seen as an unwarranted discrimination between the use of pesticides, even the same pesticide, before or after harvest.

45. The delegation of Czechoslovakia informed the Committee that, that country had established two lists of maximum residue limits: one for imports corresponding to Codex recommendations and another for food produced in the country.

46. The delegation of New Zealand stated that its government intended to give either full or limited acceptance to Codex maximum residue limits.

47. The Australian and New Zealand delegations expressed their disquiet at the adoption by the European Economic Community of a Directive on pesticide residues in and on fruit and vegetables. This Directive contained some figures which conflicted with the proposals of the Committee. After explanation from the representative of the Commission of the EEC, the Committee noted that the Directive was of an "optional" nature and that EEC member countries were authorized to adopt higher maximum residue limits than those set out in Annex 2 of the Directive, on the understanding that they should not be lower than those in the Directive, nor exceed any relevant Codex recommended maximum residue limits.

Discussion of Specific Recommendations

48. The following paragraphs reflect discussions about individual maximum residue limits in foods. The maximum residue limits discussed by the Committee and their status in the Codex Procedure are summarized in Appendix 2 to this report.

ALDRIN and DIELDRIN

Fruit (except Citrus fruit): 1.3

49. The Committee decided to change the proposed maximum residue limit in fruit to 0.05 mg/kg which corresponds to that for Citrus fruit at Step 9 of the Procedure. Consequently, the Secretariat was requested to make the necessary editorial changes in future editions of the booklet "Recommended International Maximum Residue Limits".

AZINPHOS-METHYL

Apricots: 2.2

50. After discussion on the maximum residue limit for azinphos-methyl in apricots, the Committee, having noted that the proposed limit of 4 mg/kg was not acceptable to some countries and that it was unlikely that further residue data would be forthcoming, decided to reduce the limit to 2 mg/kg. However, the delegations of the USA and of Israel reminded the Committee of the possible consequences of changing maximum residue limits proposed by the Joint Meeting in the absence of appropriate data. The Committee concluded that, as this limit had been put to governments for comment at Step 6 on three occasions, and in the absence of further residue data, there appeared no alternative but to deal with the amendment of the proposed limit in the Committee. This was not intended to establish a precedent to the consideration of future maximum residue limits at Step 6.

Other Questions

51. As azinphos-ethyl had not yet been cleared toxicologically, it was decided to delete it for the time being from the overall maximum residue limit. The Secretariat was requested to take appropriate steps to ensure that the ethyl analogue is reinstated immediately after it has been given an ADI.

52. The Committee noted that the maximum residue limit of 0.2 mg/kg for a number of commodities was based on practical considerations concerning analytical methodology used for determining residues of azinphos-methyl at these sorts of levels. The Committee decided to refer this matter to the ad hoc Working Group on Analysis for its advice on whether the limit of 0.2 mg/kg should be marked with a footnote indicating that it was close to the limit of determination (see para 183).

BROMOPHOS

Definition of Residue

53. As stated in paragraphs 34-35 of the report of the 8th session of this Committee, the Joint Meeting had been asked to clarify points relating to the metabolic pathways, and presentation of residue data of this compound in the 1972 Evaluations. The Canadian delegation, referring to their written comments on this point, reserved their position on this compound until the 1975 Evaluations became available.

Red Currants: 4.9; Blackberries: 4.15, and Black Currants: 4.16

54. The Netherlands delegation drew attention to the varying maximum residue limits for the different kinds of currants. The Joint Meeting was requested to review the proposed maximum residue limits for red currants in the light of the proposed figures for blackberries and black currants.

Sugar Beet (roots): 4.22

55. The Netherlands delegation stated that the use of bromophos on sugar beet could not only leave residues in the roots, but also on the tops of the beet which were used extensively as cattle feed and, therefore, could give rise to residues in meat and milk. The Joint Meeting was requested to propose a maximum residue limit for meat in the light of the use of bromophos on sugar beet.

Broccoli, Red Cabbage, Cabbage, Cauliflower: 4.27 - 4.30

56. The Netherlands delegation was of the opinion that the proposed figures for the various types of cabbage were too low in the light of the good agricultural practice of several countries. As no data were available concerning the residues resulting from this type of treatment, the Committee decided not to change the proposed figures. The Committee decided to delete the item Red Cabbage (4.28) as it was synonymous with Cabbage (4.29).

Milk (whole): 4.35

57. It was agreed that a maximum residue limit of 0.05 mg/kg instead of the proposed 0.02 mg/kg would be more realistic in order to deal with cases where stables were treated with the compound. After some discussion, the Committee deferred the question of whether a residue resulting from the treatment of stables should be considered as a "maximum residue limit" or a "practical residue limit".

Wheat: 4.26; Bran, Maize, Sorghum: 4.36-4.38

58. The Egyptian delegate drew attention to the fact that in several countries these commodities were consumed by humans after relatively little processing and that the levels of residues proposed, which resulted from post-harvest treatments should, therefore, be considered in the light of food intake patterns in these countries. It was agreed to await the 1975 Evaluations as a basis for further discussion, and to bring the matter to the attention of the Joint Meeting.

BROMOPHOS-ETHYL

Black Currant: 5.14 and Strawberries: 5.16

59. The Committee, having noted that the treatment of black currant (0.2 mg/kg) and strawberries (0.1 mg/kg) was comparable to that of red currant (1 mg/kg), agreed to increase the limit to 0.5 mg/kg noting that the data considered by the Joint Meeting supported such an increase.

Cabbage: 5.18 and Kohlrabi: 5.19

60. It was pointed out that the compound was not only used as a soil treatment but also as a direct treatment on cabbage and kohlrabi and that these two commodities were similar from a point of view of residue retention. Consequently, the Committee decided to amend the limits from 0.1 and 0.05 mg/kg respectively to 0.5 mg/kg for both commodities.

Milk (whole): 5.25 and Milk Products: 5.26

61. The Committee agreed to a proposal of the 1975 Joint Meeting to change the individual limits for whole milk and milk products of 0.02 mg/kg to a combined limit of 0.2 mg/kg for milk and milk products on a fat basis.

Intake of Bromophos-ethyl

62. In view of the above changes to some maximum residue limits, the Committee asked the Joint Meeting to look at the possible intake of this pesticide. In doing so, the Committee noted the relevance of the residue and disappearance data set out in the monographs of the Joint Meeting.

CAPTAFOL

Apricots: 6.7 and Plums: 6.8

63. Although only a few countries were found to use captafol on apricots and plums after blossoming, it was agreed that, when so used, residues up to the proposed maximum residue limits could occur. Several delegations felt unable to accept the relatively high figures involved.

Cranberries: 6.9

64. From the data summarized in the 1973 Evaluations a maximum residue limit of 5 mg/kg appeared sufficient. It was decided to refer this item back to the Joint Meeting for a review of the available data and to see whether the proposed maximum residue limit could be lowered to 5 mg/kg.

Apples: 6.11 and Pears: 6.12

65. In the 1973 Evaluations no residue data for these products had been published. The Committee, therefore, felt unable to comment and referred the matter back to the Joint Meeting.

CAPTAN

Apples: 7.1, Cherries: 7.2 and Pears: 7.3

66. At the 8th session, the Committee had decided to ask governments to send data to the Joint Meeting; however, insufficient data had been received to enable the Joint Meeting to re-evaluate the proposed maximum residue limits. The U.S. delegation agreed to send any available data to the Joint Meeting and the French delegation indicated data which would support a maximum residue limit of 5 mg/kg for these commodities. The Committee decided to return the proposed tolerances to Step 6 with an urgent request to governments to send data to the Joint Meeting.

CARBARYL

Nature of Residue

67. The Swiss delegation drew attention to the possibility that nitrosocarbaryl might be formed when high amounts of residues of carbaryl occurred and indicated that it was unable to accept a maximum residue limit higher than 2 mg/kg. The WHO representative affirmed that at a meeting of the IARC in 1976 this point had been discussed, but that no conclusion could be reached about the formation of nitroso-carbaryl in practical situations. He asked delegations to send any available data on this question to WHO. Furthermore, he referred to the findings of the WHO calculations indicating a theoretical possibility of exceeding the ADI and suggested that further studies should be carried out on the disappearance of the compound after harvest and processing.

Animal feedstuffs (green): 8.37

68. The Committee noted that a residue of up to 100 mg/kg on animal feedstuffs could give rise to measurable residues of carbaryl and some metabolites in meat and milk (the limit of determination is at or about 0.1 mg/kg) but that in 1973 the Joint Meeting had reported that no analytical method suitable for regulatory purposes was available. After discussion it was decided to return the proposal to Step 6 and to ask governments to send their comments in the light of the 1976 Evaluations dealing with this matter.

69. The delegation of the Federal Republic of Germany pointed out that the no-effect level of carbaryl in rodents was 200 mg/kg whereas a no-effect level on ruminants was not available. It, therefore, questioned what animal health consequences would result from the use of feed with residues up to 100 mg/kg.

CARBOPHENOTHION

70. The Committee was informed that the 1976 Joint Meeting had withdrawn the temporary ADI since additional data required by the Joint Meeting had not been made available. The delegations of Canada and the USA undertook to pursue the matter with the manufacturer and to attempt to see that any data should be made available to WHO. The delegation of France pointed out that in its view the theoretical potential residue intake could exceed the ADI. The Committee agreed to retain all limits for carbophenothion at Step 7 pending further consideration of the compound by the Joint Meeting.

CHLORDANE

Various vegetables: 12.16 - 12.31

71. Delegates referred to the environmental problems which could result from the use of this type of compound as regards the accumulation of residues in foods of animal origin and also as regards the possible carcinogenic properties of the technical product. Many members reported that the use of the compound had been discontinued in their countries. After discussion some delegations were prepared to accept a general maximum residue limit of 0.1 mg/kg although the compound was not permitted for use in their countries. The Committee decided to refer items 12.16-12.31 back to the Joint Meeting with the request for new proposals in view of the reduction in the use of the compound in the world during recent years. It was also argued that in most cases a "practical residue limit" would be more realistic than a maximum residue limit as proposed. (See also the discussion on DDT, para 83).

Various Nuts and Fruits and Olives: 12.38 - 12.50

72. The Committee considered a limit of 0.1 mg/kg for a variety of fruits and nuts proposed by the 1974 Joint Meeting. It noted that the Joint Meeting had considered that this limit represented a practical limit of determination considering the multi-detection methods which were widely used in food surveillance. The Committee decided to request the advice of the ad hoc Working Group on Methods of Analysis before reaching conclusions concerning these limits (see para 183).

CHLORDIMEFORM

73. The Committee was informed that the compound had been temporarily withdrawn from the market by the manufacturer pending the results of current toxicological research. It was decided to undertake no action on this item at this stage.

CHLORMEQUAT

74. It was agreed to return items 15.1 (oat) and 15.3 (wheat) to Step 6 and to consult governments in the light of the revised proposals of the 1976 Joint Meeting for 10 mg/kg instead of 5 mg/kg and 5 mg/kg instead of 3 mg/kg, respectively.

CHLOROBENZILATE

75. The Committee was informed by the manufacturer that the compound was being re-evaluated in the USA with studies in the mouse and the rat, but that the results were not yet available. It was decided to keep the items 16.6 (apples), 16.8 (grapes), 16.9 (tomato), 16.10 (whole milk) at Step 6. The Committee took note of the amendment by the Joint Meeting of the proposed maximum residue limit for apples (16.6) from 2 mg/kg to 5 mg/kg.

CHLORPYRIFOS

76. The Committee was informed by the delegation of Israel that a study in Israel on the disappearance of the residue had produced some reassuring preliminary results.

Peppers: 17.11

77. On a proposal by the delegation of Israel the Committee agreed to change the maximum residue limit for peppers (17.11) from 0.2 mg/kg to 0.5 mg/kg, since the retention of the residue on peppers was similar to that on tomatoes for which a maximum residue limit of 0.5 mg/kg had been recommended. It was agreed that the amended maximum residue limit should be advanced to Step 8 of the Procedure. The delegation of Israel undertook to provide data to the Joint Meeting to substantiate this argument.

Poultry: 17.14

78. The Committee noted that the 1975 Joint Meeting had amended this item to: "turkey: 0.2 mg/kg in the carcase fat or in the skin" and "chicken: 0.1 mg/kg in the carcase fat". It was agreed to send these maximum residue limits as amended to Step 8 of the Procedure.

Eggs: 17.31

79. The Committee decided to specify that the maximum residue limit referred to "eggs on a shell-free basis" and to define eggs as "whole eggs and whole egg pulp". These changes were not considered to be substantive and it was agreed to recommend to the Commission that Steps 6, 7 and 8 be omitted.

2,4-D

Barley, Oat, Rye, Wheat: 20.1 - 20.4

80. The Committee noted that the 1975 Joint Meeting had proposed to replace the individual maximum residue limit by a group limit of 0.2 mg/kg for raw grain. In the absence of the 1975 Evaluations and in order to establish which commodities were covered by this item, the Committee decided not to change the proposals at this stage and to return them to Step 6.

Citrus fruit, Potatoes, Milk, Milk Products: 20.5 - 20.8;

Meat and Eggs: 20.12 - 20.13

81. The Committee decided to advance these proposals to Step 5 with the recommendation that Steps 6, 7 and 8 be omitted.

Vaccinium berries, Blackberries and Raspberries: 20.9 - 20.11

82. In the absence of the 1975 Evaluations, the Committee decided to return these proposals to Step 3.

DDT

83. Many delegations pointed out that for environmental reasons and because of the accumulation of the product in the food chain, the agricultural use of this compound in their countries had been discontinued. It was also agreed that most of the existing proposals might need to be revised in the light of the new patterns of usage and at the same time consideration should be given to establishing "Practical Residue Limits" resulting from environmental contamination from past use of the compound. As the Joint Meeting had not felt able to make new proposals because there were no new data,it was decided to ask the Secretariat to undertake action to gather the following information by means of a circular letter to member countries:

(a) existing uses and the residues resulting from these uses;
(b) residues found in home-grown and imported food commodities.

The Joint Meeting was requested to reconsider the proposals in the light of this information.

84. It was also pointed out that several proposals referred to foodstuffs grown in temperate climates, where most uses of DDT had been discontinued, whereas no limits had been proposed on several tropical foods, where the product was perhaps still in use.

Carcase meat: 21.12

85. Several delegations considered the proposed figure realistic and argued that data supporting the proposal had been supplied to the Joint Meeting. Other delegations queried the need for a figure of this order as a result of environmental persistence from past usage. On a proposal by the Australian and New Zealand delegations, it was agreed to advance the proposed limit as a Practical Residue Limit to Step 8.

DIAZINON

Milk: 22.23 and Milk Products: 22.24

86. In the absence of the 1975 Evaluations it was decided to return these proposals to Step 3.

DICOFOL

Cucumber, Gherkins, Strawberries, Tomatoes: 26.5 - 26.8

87. The Committee decided to advance the proposals to Step 5 with the recommendation that Steps 6, 7 and 8 be omitted.

DIMETHOATE

88. The Committee decided to add to the definition of the residue "and/or omethoate", as residues resulting from the use of omethoate could not be distinguished from those resulting from the use of dimethoate itself and of formothion (see also omethoate, para 118).

89. On the proposal of the delegation of Canada it was decided to change the proposed maximum residue limit for strawberries to 1 mg/kg and to advance it to Step 8. It was noted that data supporting this proposal had been made available to the Joint Meeting.

DIPHENYLAMINE

90. The Committee noted that the 11th session of the Commission had not been able to act on the Committee's recommendation on the maximum residue limit in apples pending evaluation of new toxicological information. It also noted that the Joint Meeting had confirmed the ADI and had rounded it off from 0.025 to 0.02 mg/kg body-weight. The Committee decided to return the limit for apples to Step 6 of the Procedure and requested governments to send any data substantiating the maximum residue limit of 10 mg/kg.

DIQUAT

91. Several delegations informed the Committee that, in view of the low ADI and the persistent nature of the residue, the use of this pesticide had been restricted in their countries. Other delegations pointed out that diquat was used only occasionally and under special circumstances.

92. The delegation of Japan informed the Committee that it had sent data to the Joint Meeting for the establishment of a limit in brown rice. The Committee requested the Joint Meeting to consider the data submitted by Japan.

Barley and wheat (as animal feed): 31.15, 31.17

93. As regards the maximum residue limits for raw grain destined for use as animal feed, the Committee agreed that there would be difficulties in distinguishing between grain destined for such use and grain intended for human consumption. It was agreed to delete the reference to animal feed in this item and to request comments and information from governments so that the Joint Meeting could reconsider the maximum residue limits for diquat in barley and wheat. Until this question was clarified the Committee agreed that the limit for wheat flour should also be returned to Step 6 of the Procedure.

ENDOSULFAN

Carrots, Potatoes, Sweet Potatoes, Onions: 32.7 - 32.10

94. The Canadian delegation was of the opinion that extensive new data showed that residues were always less than 0.1 mg/kg. As these data were not available, the Committee decided to advance the proposals to Step 5.

ENDRIN

Poultry: 33.11; Eggs: 33.12

95. Although the use of this compound had been discontinued in many countries, it was pointed out that when used according to good agricultural practice, e.g. in rice culture, residues up to the proposed levels could occur. Data supporting the figures had been submitted to the Joint Meeting by the United Kingdom.

ETHION

96. The Netherlands delegation referred to their written comment that the proposals for this broad field of applications could not generally be accepted because there was a possibility that in the event of a high consumption of several foods with residues up to the proposed levels, the ADI could be exceeded. These views were supported by the delegation of the Federal Republic of Germany.

97. The Canadian delegation was of the opinion that, as stated in their written comments, a large number of the proposed maximum residue limits were higher than was justified on the basis of data summarized in the 1972 Evaluations. The Australian delegation pointed out that the compound was used only against specific pests and that, therefore, the incidence of high residues would be low. It was agreed to request WHO to review the proposals in the light of these comments.

Milk: 34.41 and Milk Products: 34.42

98. It was pointed out that the proposed figure was based on blended milk.

FENCHLORFOS

Carcase meat of cattle, goats and sheep: 36.6 - 36.8

99. Several delegations pointed out that the relatively high figures proposed for these commodities were necessary so as to accommodate quarantine treatment against cattle tick which was an officially recommended use in several countries. However, the incidence of residues at these sorts of levels would be very low and even when residues of up to 10 mg/kg occurred regularly, the ADI should not be exceeded.

FENITROTHION

Wheat and Products of Wheat: 37.12 - 37.14, 37.16

100. A number of delegations were of the opinion that in view of the toxic properties of this pesticide they could not accept the maximum residue limits proposed. It was also stated that wheat bran was consumed by some persons in relatively high amounts and that in those cases the limits proposed could give rise to difficulties. On the other hand, the Committee was informed that there was urgent need to use effective insecticides to protect stored grain, especially in view of increasing resistance to existing insecticides and in view of climatic conditions during harvest and storage prevailing in some areas of the world. The Committee requested WHO to look into the question of possible intakes of fenitrothion in an attempt to provide the answers to the objections raised above.

Rice in the husk: 37.18 and Rice (polished): 37.29

101. The Committee agreed to replace the existing maximum residue limits with the new proposals of the 1976 Joint Meeting and to request government comments on them at Step 3 of the Procedure.

Oranges: 37.23

102. The Committee briefly considered the feasibility of applying the limit on Citrus fruit rather than simply on oranges. It was noted that the data available to the Joint Meeting was limited to oranges only and that at this stage it would be inappropriate to extend the limit to cover all Citrus fruit. Governments were invited to send additional data to the Joint Meeting on residue levels of different varieties of Citrus fruit.

FENSULPHOTHION

103. The Committee noted that the limit of 0.5 mg/kg in peanuts given in Appendix II of ALINORM 76/24 and document CX/PR 77/5 was erroneous and should read 0.05 mg/kg.

FENTHION

104. The delegations of Canada and Switzerland were of the opinion that the maximum residue limits for these pesticides should not be advanced to Step 8 in view of doubts concerning the adequacy of residue and toxicological data. It was also noted that the question of whether there was any problem concerning the potential daily intake of fenthion residues had not yet been resolved. After explanations from the Chairman concerning the provision of more comprehensive data and its re-evaluation by the Joint Meeting, the Committee decided to return all maximum residue limits for fenthion to the Joint Meeting for review and requested governments to send residue data following good agricultural practice, data from food control and monitoring activities and other relevant information such as disappearance data.

FORMOTHION

105. It was pointed out that residues resulting from the application of formothion on Citrus fruit could not be fully covered by the maximum residue limit for dimethoate and that a separate maximum residue limit for this compound in Citrus fruit (based on residues of the parent compound in the peel) was justified.

HEPTACHLOR

106. The Netherlands delegation was of the opinion that the practical residue limit of 0.05 mg/kg for sugar beet (43.7) was inconsistent with the earlier endorsed values for milk and milk products (43.3 and 43.4) and carcase meat (43.5) due to the accumulation of residues from feed in these animal products and from the use of significant quantities of sugar beet tops and leaves and wet and dry pulp in rations for cattle. This view was endorsed by several other delegations. Others did not accept that there could be a direct correlation between intake and residues in animal products in this way as it was unlikely that feed contained residues at the maximum limit and that these residues all passed into the animal products. The Committee was informed that many data on the subject had become available in the literature over the last few years and decided to refer item 43.7 back to the Joint Meeting with a request to review the proposed value.

LINDANE

107. The delegation of Switzerland presented the following statement concerning the use of technical HCH to the Committee: Technical HCH is still used in several countries as an insecticide. The active ingredient lindane constitutes only a minor part of the product, the other isomers of hexachlorocyclohexane which are without insecticidal activity and serve only as bulk contaminate food with persistent residues, mainly of the alpha- and beta-isomers. The Swiss delegation is of the opinion that the use of technical HCH in the production of food does not correspond to a good agricultural and/or manufacturing practice. The term "production of food" comprises in this context any treatment of crop, animals, animal dwellings and other premises where food is produced or manufactured. On the other hand, it is realized that in some countries an immediate withdrawal of texhnical HCH is, mainly for economical reasons, not yet possible. The Swiss delegation suggests, therefore, that every effort should be made in order to restrict gradually and as much as possible the use of technical HCH in agriculture and to discontinue completely the uses in non-agricultural domains. Several delegations supported the view of the Swiss delegation but it was felt that a number of countries were not able in the near future to replace technical HCH by lindane or other insecticides, as recommended by the 1973 Joint Meeting. The representative of FAO pointed out that no data were available to propose practical residue limits for alpha- and beta-HCH. The Committee decided to request the Secretariat to include a question about the uses of technical HCH in the circular letter to be issued on the use of DDT (see para 83).

Vegetables: 48.14

108. As the 1975 Joint Meeting had proposed individual maximum residue limits for several foods (48.20-48.30) the Committee decided to delete this general item.

Beans: 48.15

109. The Committee noted that data received and reviewed by the 1975 Joint Meeting had not enabled the proposed figure to be lowered.

Apples, Pears, Sugar Beet (roots) and Sugar Beet (tops): 48.16 - 48.19

110. The Committee decided to endorse the changes proposed by the 1975 Joint Meeting for these foods and to advance the amended proposals to Step 8.

MALATHION

Lettuce: 49.6, Broccoli: 49.15, Turnip: 49.18, Apples: 49.19 and Celery: 49.21

111. In the opinion of several delegations the proposed figures were much higher than needed since they never encountered residues up to the proposed maximum limits. It was pointed out that data were available to the Joint Meeting which fully justified the proposals and that residues declined rapidly after harvest and still more at processing. Actual intake would be far below the ADI.

Lettuce: 49.6 and Apples: 49.19

112. The Committee noted that the Canadian delegation had made data available to the Joint Meeting supporting a maximum residue limit of 3 mg/kg on lettuce and 2 mg/kg on apples.

MANCOZEB

113. As ethylene-bis-dithiocarbamates (EBDCs) were on the agenda of the Joint Meeting 1977 for re-evaluation on toxicological and analytical grounds, the Committee decided not to advance the proposals at this moment. The conversion of EBDC to ethylene thiourea (ETU) and the toxicity of ETU were under study at several places in the world (see also para 157).

114. The Canadian delegation informed the Committee about studies undertaken in their country. Work had been initiated on EBDC and ETU levels in potatoes, tomatoes, grapes, onions, apples, pears and mushrooms both on field samples and in processed foods. New and more accurate methods of analysis for ETU had been developed, the limit of determination being at the 0.01 mg/kg level. Preliminary results indicated levels of ETU in whole potatoes up to 0.02 mg/kg, no residue being found in the pulp, and up to 0.03 mg/kg in processed tomato products. Work was in progress to decrease levels of EBDC and ETU. Results would be forwarded to FAO as soon as the work would be completed.

115. The Danish delegation questioned whether residues of ETU should not be presented as guideline levels in the absence of an ADI for this compound.

METHIDATHION

Leafy vegetables: 51.12

116. The delegation of the Netherlands informed the Committee that the proposed figure would not be sufficient to cover the use of this compound on glasshouse crops. Additional information would be provided to the Joint Meeting to enable them to make additional proposals for these foods.

MONOCROTOPHOS

117. Several delegations stated that in view of the low ADI established for this pesticide, the proposed maximum residue limits for apples and pears of 1 mg/kg would not be acceptable. This was all the more so as these fruits were usually eaten unprocessed or without cooking. The representative of WHO informed the Committee that on the basis of calculations, taking into account disappearance data, there was firm evidence that the ADI would not be exceeded. The Committee adopted the proposal of the 1975 Joint Meeting to change the maximum residue limit on tomatoes to 1 mg/kg.

OMETHOATE

118. The Committee noted that the 1975 Joint Meeting had addressed itself to the question of maximum residue limits for omethoate residues from the use of dimethoate, omethoate itself and, to a relatively insignificant extent, from formothion. The Committee considered that the maximum residue limits established for dimethoate and omethoate needed an additional review in order to achieve consistency between the proposed levels for the three compounds (see Appendix II). In reply to a question about the low temporary ADI of omethoate, the Committee noted that this was due to the use of a high safety factor pending the outcome of long term toxicity tests.

ORTHOPHENYLPHENOL

119. The delegation of Switzerland informed the Committee that a residue limit would be in force for Citrus fruit in that country and that the use of orthophenylphenol would not be permitted in other food items. The Committee adopted the proposal of the Joint Meeting to change the maximum residue limit for apples to 25 mg/kg.

120. After explanation from the delegation of the USA about good agricultural practice in parts of their country, the Committee confirmed the need for a maximum residue limit for residues of the compound on carrots.

121. A number of delegations expressed concern about the low ADI of this pesticide, especially in view of the persistence of the residue. The representative of WHO informed the Committee that on the basis of calculations it was not likely that the ADI would be exceeded.

PARATHION-METHYL

122. Some delegations queried the high figure of 1 mg/kg for item 59.6 (amended to read "other vegetables") since the maximum residue limit was still based on a temporary ADI, following a review by the 1975 Joint Meeting. The Committee was informed by the representative of WHO that certain aspects of the toxicology of this compound required clarification in the light of a reproduction study, preferably on primates. It was likely that the compound would be reviewed by the 1978 Joint Meeting. The Committee noted the large disappearance factor of residues of parathion-methyl and that evidence indicated that intake was low. It decided to return item 59.6 to Step 6, awaiting the results of the toxicological studies. Governments and manufacturers were requested to provide data for consideration by the Joint Meeting.

PHOSALONE

123. The delegation of Switzerland reserved its position on all levels above 2 mg/kg and the delegation of the Netherlands reserved its position with regard to all limits, pending further evaluation of the compound in their country. The Committee agreed to a proposal of the 1976 Joint Meeting to increase the limit for cherries (60.5) from 2 to 10 mg/kg.

PIPERONYL BUTOXIDE

124. The delegation of the Federal Republic of Germany stated that in its view the maximum residue limit for vegetables (62.7) of 8 mg/kg was too high, as surveillance data in Germany showed that levels did not exceed 3 mg/kg. The Committee maintained the proposed maximum residue limits.

QUINTOZENE

125. The delegations of the Netherlands and of the Federal Republic of Germany were of the opinion that the impurities hexachlorobenzene (HCB) and pentachlorobenzene (PCB) should not be included in the definition of the residue of this compound. In their view the presence of these impurities in quintozene and of some other pesticides used in agriculture was highly undesirable because of its persistence and accumulation. HCB would also appear as a practical residue limit on foods where previous crops had been treated with other pesticides containing this impurity. Furthermore, residues of the parent compound quintozene were relatively short-lived and the presence of HCB and PCB could, therefore, have the consequence that a very high proportion of the total residue would consist of these compounds. The delegation of Australia reminded the Committee that toxicity studies on quintozene had been carried out on a product containing these impurities. The delegation of Australia pointed out that the Joint Meeting had seen no data to enable it to propose a practical residue limit for HCB and PCB. The Committee acknowledged that the manufacturers of quintozene had made serious and successful efforts to reduce the level of undesirable impurities in the preparation for agricultural use. In the light of this discussion, the Joint Meeting was requested to review the situation and to propose residue figures for HCB and PCB separately on the basis of data to be forwarded to them by the Netherlands and any other delegations who could contribute. The Committee decided not to advance the proposed maximum residue limits at this stage.

THIABENDAZOLE

126. The delegation of the Netherlands pointed out that the Joint Meeting had proposed maximum residue limits resulting only from post-harvest treatment. As there were also a number of crops such as apples, grains, strawberries, potatoes and Citrus, on which the compound was used before harvest, the Joint Meeting was requested to review this compound in the light of such data to be provided by the Netherlands and the manufacturer and any other sources. The representative of WHO requested those concerned to forward all available toxicological data that had not yet been evaluated.

TRICHLORFON

Tomatoes: 66.23

127. Pending reconsideration of the ADI of the compound, it was agreed not to advance the proposal for tomatoes which, at the suggestion of the 1975 Joint Meeting, had been changed to 0.2 mg/kg.

CYHEXATIN

Tea (dry, manufactured): 67.4

128. The delegation of Japan informed the Committee that it had not been able to provide residue data on tea to the Joint Meeting due to the need first to develop a suitable method of analysis. The Committee noted that IUPAC had also developed a method which would in due course be considered by the Working Group for Methods of Analysis.

Meat, Milk and Milk Products: 67.5 - 67.7

129. The Committee noted the explanation by the 1976 Joint Meeting to the question raised at the 8th session of the Committee as to why the residue limit for meat was established for the whole product whereas for milk and milk products it was on a fat basis. As regards the maximum residue limit in milk, it was noted that, although higher residues could be expected in the milk of individual cows, the maximum limit was appropriate as it took into account the practice of bulking which would result in a lowering of average cyhexatin residue.

Tomatoes, Gherkins, Cucumbers, Melons and Bell Peppers: 67.8 - 67.12

130. The Committee agreed to advance the residue limits for the above foods to Step 5 and recommended that Steps 6, 7 and 8 be omitted. It also agreed to extend the limit to all bell peppers, not only those cultivated under glass, because in commerce no distinction could be made based on the origin of the product.

BROMOPROPYLATE

Prunes: 70.11

131. As prunes were covered under plums (70.10) the separate provision for prunes was deleted.

DISULFOTON

132. The Committee noted that the 1975 Joint Meeting had changed the temporary maximum residue limit to a firm maximum residue limit. The Committee agreed to this change.

133. The delegation of the Netherlands made a general reservation to the proposals because the 1973 Evaluations contained no data indicating the consequences of possible accumulation of the compound in foods of animal origin.

134. The Committee agreed to delete the list of examples of individual vegetables which, it was noted, only served the purpose of indicating the products for which data had been provided and on the basis of which a group maximum residue limit had been set for vegetables. The Committee further agreed to list potatoes and sugar beet (roots) separately at a maximum residue limit of 0.5 mg/kg.

Cottonseed: 74.8

135. As this item had been withdrawn by the 1975 Joint Meeting, it was deleted by the Committee.

PROPOXUR

136. The delegation of Canada expressed the view that the reference to "metabolites" in the definition of the residue should be more specific. It was agreed to refer this matter to the secretariat on the basis of the specification on page 364 of the 1974 Evaluations.

Vegetables and Root Vegetables: 75.10 and 75.11

137. The order of these provisions was reversed and the word "other" inserted before "vegetables". It was further agreed to provide for potatoes separately.

Raw cereals: 75.12

138. It was understood that raw cereals included "rice in the husk".

THIOMETON

139. The Committee noted that the 1976 Joint Meeting has reviewed the residue definition and agreed to the change which would not affect the present limits. It should read: "thiometon, its sulfoxide and sulfone and expressed as thiometon".

Peas: 76.13 and Hops (dry): 76.17

140. The change to a more specific description: "peas (green, in pods) and the change in the maximum residue limit for hops (dry)" as proposed by the 1976 Joint Meeting were agreed.

THIOPHANATE-METHYL

141. It was pointed out by the delegation of the Federal Republic of Germany that the metabolite carbendazim (item 72), which was contained in the residue of the compound under consideration could also originate from the use of Benomyl (item 69). The delegation further explained that thiophanate-ethyl, with comparable metabolites, was also used in some countries. The delegation of Japan explained that not only the metabolite carbendazim was the active ingredient, but also the parent material thiophanate-methyl. In the light of the complex situation in which thiophanate-methyl, together with its metabolite carbendazim, has received a full ADI, whereas benomyl and the more active metabolite of both compounds, carbendazim, were still kept under guideline levels, the Committee decided to advance the items under consideration to Step 5 with a request to the Joint Meeting to re-evaluate the situation with the compounds under items 69, 72, 77 and possibly thiophanate-ethyl.

AMITROL

Raw Agricultural Commodities of Plant Origin: 79.1

142. The Committee decided to send item 79.1 to Step 5 with a request to the Joint Meeting to reconsider the notion of "conditional" maximum residue limit. It was expressed by the delegation of Canada that the criterion of the presence of alternative compounds was not a toxicological consideration and consequently the term "temporary" maximum residue limit was more appropriate. The Committee agreed unanimously that residues of this compound should not be present in food for human consumption. Some delegations felt that it was not necessarily contrary to good agricultural practice for the compound to be used for example under apple trees on condition that no residues in food occurred. In this connection, it was stated that no residues in animal feed originating from such orchards or in commodities from animal origin had been found.

CHINOMETHIONAT

Apples: 80.8

143. It was pointed out that the present limit was based on data which, with one exception, showed residue levels below 0.2 mg/kg. Some delegations stated that in their view a limit of 0.2 mg/kg would suffice. After some discussion the Committee agreed to request the Joint Meeting to reconsider the data on which it had based its recommendation. In the light of the fact that the national legislations in some countries had a limit of 0.5 mg/kg, it was further agreed that governments wishing to do so could make further relevant data available to the Joint Meeting.

CHLOROTHALONIL

144. Many data had been summarized in the 1974 Evaluations and pre-harvest intervals on which proposals had been based were indicated. Several delegations pointed out, however, that for a number of proposals the residue levels corresponding to these pre-harvest intervals were not presented in a manner which enabled them to judge whether the proposals were satisfactory. The Committee decided to ask the Joint Secretaries to look into the data that were available to the Joint Meeting and to try to give clarification on this matter. It was pointed out that residues disappeared rather rapidly on washing as indicated in the 1974 Evaluations.

145. Although it was recognized that on some crops rather short pre-harvest intervals could be necessary taking into account good agricultural practice, it was questioned whether pre-harvest intervals of as little as one day were justified on crops such as sugar beets, carrots and potatoes.

146. The Committee was informed that re-evaluation of the compound had been scheduled for 1977 and that the Joint Meeting would be willing to take into account information and questions that governments would address to it. The delegation of Switzerland drew the Committee's attention to non-agricultural use of the compound.

Oranges: 81.18

147. The Committee agreed to change the entry for oranges to Citrus fruit.

DICHLOFLUANID

Tomatoes: 82.12

148. The Netherlands delegation questioned whether the proposed figure would be sufficient to accommodate the use of this compound in glasshouse culture and undertook to attempt to provide relevant residue data to the Joint Meeting.

DICLORAN

149. On the proposal of the delegations of Australia and of Israel, the Committee decided to request governments to comment on (a) increasing the maximum residue limit in apricots to 15 mg/kg; and (b) establishing a new maximum residue limit for dicloran of 15 mg/kg in nectarines. The delegations of Australia and Israel undertook to supply data on apricots and nectarines respectively.

DODINE

150. The Committee noted that a firm ADI had been established for this compound by the 1976 Joint Meeting and that, therefore, the maximum residue limits were no longer temporary.

Apples: 84.4 and Pears: 84.5

151. At the request of the delegation of Canada and of the USA, and after interventions by the representatives of FAO and WHO on the supporting data, the Committee decided to change the proposed limits for these commodities to 5 mg/kg.

FENAMIPHOS

Potatoes: 85.18 and Tomatoes: 85.19

152. The Committee decided to bring these proposals in line with the others and to change the temporary maximum residue limits for these commodities to maximum residue limits.

PIRIMIPHOS-METHYL

153. The Committee noted that a firm ADI had been established for this compound by the 1976 Joint Meeting. The delegation of Canada reserved their position with regard to the ADI.

154. The Committee recalled the discussions it had previously on bromophos (para 58) concerning the effects of processing of residues in raw cereals and subsequent intake by humans; and also on paraquat (para 93) on the distinction between commodities destined for animal feed and for human consumption. In advancing the proposals to Step 5, it was concluded that the Joint Meeting should be requested to review the proposals in the light of these comments and to propose residue levels for cereal brans specifically destined for human consumption. The delegation of Czechoslovakia undertook to submit to the Joint Meeting data on the disappearance of residues of this compound in cereals and bread.

LEPTOPHOS

155. The delegation of Egypt was of the opinion that the use of this compound was a danger to animal and human health. They expressed concern about the use of such highly toxic compounds. The delegation of Israel and the representative of WHO shared this concern. The delegation of Israel proposed that consideration be given to the establishment of a machinery to delete compounds such as leptophos from the Codex list, as the appearance of such compounds on the list could be taken as an endorsement of their use. The above concern was partly based on data made available to WHO by the delegation of Egypt, indicating that thousands of deaths amongst livestock had occurred after the use of this compound. In the absence of the 1975 Evaluations, the Committee decided to postpone discussion of the proposals to its next session, and requested governments to send their comments.

Sec. BUTYLAMINE, CHLORPYRIFOS-METHYL, CYANOFENPHOS, DEMETON

156. As the 1975 Evaluations had not yet appeared, the Committee decided to postpone the discussions on these compounds and to return the proposals to Step 3.

ETHYLENEBISDITHIOCARBAMATES (EDBC)

157. The representative of IUPAC presented the conclusions and recommendations of the Pesticide Terminal Residue Commission concerning this group of compounds and ethylene-thiourea, which is considered a terminal residue of EBDC fungicides. The report on which these conclusions and proposals were based would become available within some months. The Committee decided to include the conclusions and recommendations mentioned as Appendix VI to the present report in view of the wide interest in this important matter.

Rapid Advance of Maximum Residue Limits in the Codex Procedure

158. The Committee considered whether it would be possible to advance proposed maximum residue limits more speedily. For example, at this session, the Committee decided several times to advance proposals to Step 5 with the recommendation that Steps 6, 7 and 8 be omitted. It was agreed to request governments to indicate in their written comments where Steps 6, 7 and 8 could be omitted.

Retirement of Distinguished Delegates

159. On behalf of the Committee, the Chairman addressed himself to the delegate of France, Mr. G. Viel and the delegate of the USA, Mr. K. Walker who were retiring soon and would probably be representing their countries at the session for the last time. He thanked them for their long and distinguished service to the Committee which had dated from the very beginning of its work. He hoped that the Committee would continue in the tradition which they had helped to form for many years to come.

Sampling Foods for the Determination of Pesticide Residues for Regulatory Purposes

160. The Committee had before it the report of the ad hoc Working Group on Sampling (see Appendix III to this report). The Chairman of the Working Group Mr. J.A.R. Bates (U.K.), in introducing the report, drew attention to two significant points in the report: (a) a definitive statement that the Codex limit applied to the final sample; and (b) for the purpose of enforcement the average pesticide residue content of the lot, represented by the final sample, should be compared with the Codex maximum limit.

161. The Committee further noted that the Working Group had expressed a preference for basing the number of primary samples on the weight of the lot. For use where such a procedure was not feasible - in particular in the case of processed foods -

a sampling plan based on the number of cans was provided. The Committee also noted that a clause for departures from the recommended sampling procedure had been included.

162. The Committee accepted the report and supported the Working Group's view that, once finalized, the proposed sampling method should be made widely available, preferably in the series of Recommended International Maximum Limits for Pesticide Residues, which are regularly issued by the Codex Alimentarius Commission. It also agreed that because of its general nature, the proposed sampling method should remain an advisory document. The Committee expressed the hope that governments would base any national mandatory sampling plans on these guidelines. It was agreed to submit the guidelines to governments for comments at Step 3.

163. The Committee was informed that the ad hoc Working Group on Sampling considered that short explanatory notes could be of value in understanding the principles of sampling implicit in the recommended method and had commenced work to produce such notes. It was further noted that the Working Group had started with the elaboration of recommendations for the preparation of samples for analysis and was making use of the document "Definition and Classification of Food and Food Groups for the Purpose of Codex Tolerances for Pesticide Residues" (CX/PR 77/2, see para 15).

164. The Committee thanked the Working Group for the work it had done and appointed a new ad hoc Working Group to consider the proposed work until the end of the next session. Delegations of the following countries expressed their wish to serve in the Working Group: Canada, Denmark, Federal Republic of Germany, Hungary, Italy, the Netherlands, Spain, the United Kingdom (Chairman) and the USA. The Secretariat of the Joint Meeting was also invited to attend.

Survey of Good Agricultural Practice in the Use of Pesticides

165. The 7th session of the Codex Alimentarius Commission, on the subject of pesticide residues (para 162, ALINORM 70/43) authorized the Codex Committee on Pesticide Residues to set up an ad hoc working group to consider the differences in national application of residue limits. The task of obtaining information and preparing a paper on the topic of good agricultural practice in the use of pesticides was given to the Canadian delegation at the 5th session of the Codex Committee on Pesticide Residues (see paras 14 and 15 and Appendix VIII of the report of that session (ALINORM 71/24)).

166. The Canadian delegation sent out a questionnaire to obtain information on the officially recommended use of pesticides in accordance with good agricultural practice in the production of ten selected food commodities important in international trade. The commodities included rice, grain wheat and flour, cocoa, citrus fruit, bananas, apples, meat, dairy products, coffee and leafy vegetables. A compilation (CX/PR 72/7) of the replies to this questionnaire was presented to the 6th session of the Codex Committee on Pesticide Residues in October 1972. The Canadian delegation subsequently issued an amplified questionnaire to permit participating countries to review and update their information, and a revised compilation was issued in January 1974.

167. The 7th session of the Codex Committee on Pesticide Residues asked the Canadian delegation to extend the scope of this study to include the recommended use of pesticides on an additional range of food crops (see para 186, ALINORM 74/24). The crops selected were potatoes, maize, the oleaginous crops, and the pulses. The Canadian delegation sent a questionnaire to Codex contact points to request information on the officially recommended use of pesticides on these crops. A compilation (CX/PR 75/10) of the replies to this questionnaire was submitted to the 8th session of the Codex Committee on Pesticide Residues (para 192, ALINORM 76/24).

168. These two compilations have been helpful to the ad hoc Working Group on Priority Lists in identifying compounds which are widely used in good agricultural practice and which result in residues in food commodities important in international trade.

169. The delegation of Canada informed the Committee that, in circular CL 1975/13 (Part B(5)), governments were requested to make available relevant information on any further food crops to be covered by this survey, but no positive replies were received to this request. The Canadian delegation, therefore, suggested that there was no need at this time to expand the scope of the survey.

170. The Committee recalled that, at its 8th session, it was agreed that the survey should be updated at three-year intervals (para 195, ALINORM 76/24). It accepted the offer of the delegation of Canada to issue a new questionnaire on the food commodities included in the 1974 report and to develop an updated report, to be presented to the 10th session.

Establishment of Priority Lists

171. In the absence of the Chairman of the ad hoc Working Group on Priority Lists, Mr. E.R. Houghton, the report of the Group (Room document No. 2) was introduced by Dr. A.F.H. Besemer, Vice-Chairman. On a proposal by the Israeli delegation, the Committee agreed to confirm that proposals by governments for the establishment of maximum residue limits on crops for compounds already under consideration by the Joint Meeting should meet the criteria set out in para 2 of the report (see Appendix IV). The representative of FAO pointed out that apart from the work initiated by the Committee, the Joint Meeting was also involved in requests from individual governments in line with the wider responsibilities of WHO and FAO.

172. The Committee recognized that nearly all the compounds listed in the Priority List I and List II (Report of the 8th session of the Committee, ALINORM 76/24) had been evaluated by the Joint Meeting in 1975 and 1976. However, it had not been possible to include the following compounds in the Joint Meeting's agenda: ethephon, formetanate, methomyl, phosmet and propargite for the reasons set out in para 4 of Appendix IV.

173. The Committee agreed that, because its usage was declining, formetanate should be deleted from the Priority Lists.

174. After reviewing the compounds listed in Priority List III, specified in ALINORM 76/24, it was concluded that all the compounds mentioned in this list would be deleted from the Priority Lists except tetrachlorvinphos. The latter compound was, therefore, included in Priority List IV.

175. After considering the compounds on which submissions were made by member countries and which are set out in paras 6 and 8 of Appendix IV to this report, the Committee decided to include the following compounds in the new Priority List IV:

Priority List IV

aminocarb: 4-dimethylamino-3-methylphenyl-methylcarbamate
benzoximate: ethyl O-benzyl 3-chloro-2,6-dimethoxybenzohydroximate
bupirimate: 5-butyl-2-ethylamino-6-methyl-pirimidine-4-yl-dimethylsulphamate
ethiofencarb: (2-ethylthiomethyl-phenyl)-N-methylcarbamate
fenbutatin oxide: hexabis beta, beta,-dimethylphenethyl distannoxane
glycophene: 1-isopropylcarbamoyl-3-(3,5-dichlorophenyl) hydantoïne
imazalil: 1-[2-(2,4-dichlorophenyl)-2-(2-propenyl-oxy)-ethyl]-1 H-imidazole
phorate: diethyl 3-(ethylthiomethyl)phosphoro-thiothioate
tetrachlorvinphos: trans 2-chloro-1-(2,4,5-trichlorophenyl)vinyl-dimethyl-phosphate
thiofanox: 3,3-dimethyl-1-(methylthio)-2-butanone O-[(methylamino)-carbonyl]oxime
triforine: N,N-bis(1-formamido-2,2,2-trichloroethyl)piperazine
vinclozolin: 3-(3,5-dichlorophenyl)-5-methyl-5-vinyl-1,3-oxazolidine-2,4-dione

176. The Committee agreed that the draft agenda for the Joint Meeting as presented by the secretaries of the Joint Meeting, based on the available information and including some of the compounds mentioned in Priority List IV, should be attached to the report of this session as Appendix IVa. The Committee agreed that member governments, industry and institutions should be asked to submit data on the toxicology, use of the compound and residues resulting in food to the secretaries of the Joint Meeting. This information should be provided before 30 July 1977. Announcements should also be made in appropriate journals.

177. The Committee thanked the ad hoc Working Group on Priorities for its report and confirmed Mr. E.R. Houghton as Chairman. After an invitation from the Chairman the Committee decided that a new Group should be appointed to work until the end of the next session, consisting of delegations from the same countries as in the existing group: Australia, Canada, the Federal Republic of Germany, Israel, the Netherlands, New Zealand, Switzerland, the United Kingdom and the United States of America. EPPO and the Secretariat of the Joint Meeting were invited to participate.

Methods of Analysis for Pesticide Residues

178. The Chairman of the ad hoc Working Group on Methods of Analysis, Dr. P.A. Greve, introduced the above report and drew the Committee's attention to some important aspects. The analytical methods had not been necessarily checked out for all commodities for which Codex maximum residue limits have been proposed. The Working Group had made recommendations for two sets of suitable methods: one for fatty foods and another for non-fatty foods. He also stressed the methods should be checked at the range of maximum residue limits which they are intended to measure. Furthermore, the Working Group had considered that the expression of some of the pesticide residues needed rewording in order to describe better the actual analytical practices.

179. The Committee discussed the report of the Working Group and requested the Secretariat to take appropriate steps to ensure that the recommendations of the Working Group be brought to the attention of those concerned with the analysis of pesticide residues. It was also thought appropriate to include the recommendations concerning methods of analysis in future series of recommended maximum pesticide residue limits. The Committee agreed that the residues be redrafted by the Secretariat as suggested by the Working Group when issuing future series of recommended maximum pesticide residue limits. In this respect, aldrin and dieldrin were to be referred to as HHDN and HEOD, respectively. It was noted that the Working Group had specified for the information of the analysts, minor degradation products or components which were seldom detected. The report of the ad hoc Working Group is given as Appendix V.

Expression of Codex Maximum Residue Limits

180. The Committee, at its 8th session, requested governments to comment on the way maximum limits for fat soluble pesticide residues should be expressed. Governments were also requested to express their opinion on the merits of expressing maximum residue limits in terms of geometrical or arithmetical progression (see CL 1975/13 Part B(1) and B(3)). The Chairman of the Working Group on Analysis, Dr. P.A. Greve, pointed out that the Group had considered government comments on the above questions and had made specific recommendations to the Committee in their report (see para 3 of Appendix V).

181. The Committee concurred with the conclusions of the Working Group that maximum residue limits should be expressed only to one significant digit. It was noted that the Working Group had agreed to propose a geometrical progression for limits between 0.01 and 1 and between 1 and 10. Above 10 a progression with fixed intervals had been recommended. The Committee agreed to the proposals for the intervals 0.01 and 1 and above 10, but delegations were divided on the approach to be adopted for the interval 1-10. Governments were again invited to comment on this question and the Joint Meeting's attention was also drawn to the above matter.

182. The Committee considered the conclusions of the Working Group concerning the expression of maximum residue limits for fat soluble pesticides (see para 4 of Appendix V). It noted that the proposals of the Working Group affected the expression of limits already at Step 9 of the Procedure. Furthermore, there was a need to pay attention to any existing classification on the basis of fat content of milk and meat products when proposing maximum residue limits for fat soluble pesticides in such categories of foods. The committees dealing with these commodities were requested to provide advice. The Secretariat undertook to bring this matter to the attention of the AOAC/IDF/ISO committee on analysis for milk and milk products and also of the Codex Committee on Processed Meat Products. The Committee requested governments to comment on the question of maximum residue limits for fat soluble pesticides so that the problem could be rediscussed at the next session.

183. The Committee noted the reply of the Working Group to certain questions raised during the discussion of chlordane and mancozeb. It was informed that the maximum residue limit of 0.1 mg/kg for a variety of fruits was to be regarded as a definite limit since the limit of determination of chlordane in these foods was around 0.02 mg/kg. As regards the determination of mancozeb, the Committee was informed that existing methods were not sufficiently specific to mancozeb and certainly the method based on ethylenediamine did not distinguish between mancozeb and other ethylenebis-dithiocarbamates, for which no ADI had as yet been established. The Committee referred this question to the Joint Meeting for reconsideration. The Secretariat pointed out that as the field trials involved only mancozeb the residue data themselves were not necessarily in doubt.

184. The Committee thanked the ad hoc Working Group on Analysis and reappointed Dr. P.A. Greve as Chairman of the Working Group to serve until the end of the next session. Member countries of the Working Group expressed their interest to continue to participate in the work of the Group and in addition Dr. Bressau of the delegation of the Federal Republic Germany expressed his interest to assist in the work of the Group. The Committee welcomed this participation. Governments were requested to send their comments on the various aspects mentioned above to Dr. P.A. Greve, not later than 1 December 1977.

Collaborative Study on Analysis of Pesticide Residues

185. The Committee had before it a paper prepared by Mr. J.T. Snelson of the Australian delegation entitled "Analysis of Organochlorine Residues in Butter Fat, Dept. of Primary Industry, April 1976". The collaborative study had been undertaken in order to determine variation in the results obtained when identical and homogeneous analytical samples were subjected to analysis in various laboratories. It was hoped to illustrate an example of the degree of confidence which can be placed in results of residue analysis.

186. While the variability of results obtained in the collaborative study on the analysis of organochlorine residues in butter fat was less than expected, they illustrated the need for a practical and realistic approach to the setting of maximum residue limits which took into account the difficulties confronting regulatory analysts and current analytical capabilities. It was only to be expected that variation resulting from sampling errors, unstable pesticides and multi-component compounds and other factors such as difficulties due to clean-up, extraction, binding between residue and substrate, and the use of inadequate reference substances would be larger than these found in this study and would underline the importance of allowing adequate margins when setting maximum residue limits.

187. The Committee thanked Mr. Snelson and the Australian delegation and complimented on the excellent work done. It requested the Australian delegation to continue, if possible, with this work. The delegation of Australia indicated its willingness to carry out another collaborative study in this field and invited delegations to comment to Mr. Snelson as to how a second collaborative study should be planned.

Guidelines for Good Agricultural Practice in the Use of Pesticides

188. The Committee had before it a paper prepared by the Netherlands (CX/PR 77/11), which was an amended version of the paper discussed at the previous session (CX/PR 75/8). The paper was intriduced by Dr. N. van Tiel of the Netherlands delegation. He pointed out that the document had been amended in the light of very useful comments received from a number of countries.

189. These guidelines which were of an advisory nature, were destined not to individual farmers, but to legislators, administrators and advisory agencies, in order to enable them to translate such guidelines into more concrete recommendations.

190. As this Committee was dealing with the elaboration of maximum residue limits in food, these guidelines dealt only with those aspects of the use of pesticides which were connected with possible residues in food. The guidelines did not deal with other important aspects of the use of pesticides such as occupational hazard.

191. A suggestion had been made to include a list of compounds in the guidelines whose use should be restricted or discontinued, since their use was not in accordance with good agricultural practice. It was considered, however, that it was better to leave judgements of this sort to national authorities according to the particular circumstances in their countries and of course taking into account these guidelines.

192. Several delegations congratulated Dr. van Tiel on the production of such a useful paper and proposed that the Committee should send it to the Commission with a request to have it published as soon as possible. The Committee agreed with this proposal. Some minor changes, mostly of an editorial nature, were agreed upon and included in the text which is attached as Appendix VII to the present report.

193. The Codex Secretariat informed the Committee that it was intended to publish a pesticide residue manual in which the most important recommendations of the Committee would be brought together and would provide a useful compendium for many of those concerned with pesticides work. The present guidelines could be included in such a manual.

194. The delegation of Egypt, speaking only as representative of the Ministry of Health, drew the attention of the Committee to some recent unfortunate experiences in his country following the use of pesticides. The delegation felt that this could be partly attributed to misleading advice about the properties of the compounds which had been provided by some companies. He entered a plea for more supervision of pesticides for export by governments in manufacturing countries and asked for the support of FAO and WHO in setting up a system of controls in his own country.

195. The representative of WHO drew the attention of the Committee to the Joint FAO/WHO Food and Animal Feed Monitoring Programme funded by UNEP. Funds were also available to assist countries by providing the necessary equipment and training personnel. The representative of FAO explained the involvement of his agency in assisting countries to establish the necessary mechanisms of control. The Codex Secretariat mentioned that the Commission had recognized that it was necessary to assist countries in the enforcement of Codex standards and appropriate action was being undertaken. The representative of GIFAP stated that industry generally made strenuous efforts to avoid any danger to human health from the use of pesticides but that still more efforts would be made to adapt the available data to the various local situations. Industry was certainly willing to cooperate in this field.

OTHER BUSINESS

Review of Committee's Work

196. The delegation of the USA, speaking on behalf of several delegations, reminded the Committee of the decision it had taken, at the suggestion of the delegation of Israel at the beginning of the session, to include as an item on the agenda for the next session a stock-taking of the achievements of the Committee (see also para 7 of this report). The delegation attached great importance to this matter and recommended that the views of governments on the issue should be sought without delay so as to permit early distribution of a paper, thus allowing adequate time to governments to study the findings and sunsequently to brief their delegations to the 10th session of the Committee.

197. The Committee noted that since its inception in 1963 the needs of governments concerning regulatory provisions for pesticide residues had changed; social and political requirements had evolved and scientific developments with regard to methods of analysis and data collection necessitated new approaches.

198. The delegation of the USA proposed as an outline for the study of the following chapters:

(a) background to the Codex Committee on Pesticide Residues (CCPR) - history of development;
(b) evaluation of the work of the CCPR and its impact on national tolerance-setting policies;
(c) study of possible obstacles to achieving identified objectives;
(d) recommendations for future work.

APPENDIX I

LIST OF PARTICIPANTS
LISTE DES PARTICIPANTS
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199. At the suggestion of the USA, the delegation of the Netherlands undertook to act as focal point for government observations and to prepare the paper as suggested above. It was agreed that the Netherlands could request assistance from other delegations as it deemed necessary. The delegation of the Netherlands stated that when seeking assistance it would take into account the situation in countries in different geographical areas.

Statement by the Delegation of Philippines

200. The delegation of the USA read out a statement prepared by the delegation of the Philippines who had been obliged to leave before the end of the session. The Committee noted the support lent to the Codex Committee on Pesticide Residues evaluation study by the delegation of the Philippines. It also noted the concern expressed by the delegation concerning the limited participation by governments of developing countries in the work of the Committee, despite possible serious implications of activities of the Committee for these countries.

201. The delegation of the Philippines wondered why representation of developing countries was so limited, and what action could be taken to stimulate participation. In this connection they suggested consideration of occasional change of venue and measures to increase the awareness of the importance of and the rationale behind the work of the Codex Committee on Pesticide Residues. It further proposed a review of the membership of the Joint Meeting in order to better reflect expertise in different regions of the world. In the case of the Philippines steps had been taken further to improve their country's input through direct contacts with the Joint Meeting.

202. The delegation of the Philippines was of the opinion that the work of the Joint Meeting would be facilitated if governments as well as industry, e.g. GIFAP, could collaborate with WHO to harmonize requirements for toxicological evaluation and the establishment of maximum residue limits. The Committee thanked the delegation of the Philippines for their useful suggestion.

Use of Spanish in the Committee's Work

203. The delegation of Spain presented a statement supported by the delegations of Argentina, Chile and Brazil, on the introduction of the Spanish language as a third working language of the Committee. They pointed out that this wish had been expressed already at several preceding sessions. As there are more than 20 Spanish-speaking countries, representing over 200 million people, participation of these countries would be greatly enhanced by making the Spanish language available at the session. They drew attention to the fact that Spanish was an official language of the United Nations, and that FAO and WHO had expressed sympathy with the request of these delegations. The Chairman would submit the Spanish proposal to the Netherlands government, which, he said, was prepared to consider it in a favourable light.

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APPENDIX II

LIST OF CODEX MAXIMUM LIMITS FOR PESTICIDE RESIDUES

N.B.: The numbering of pesticides and maximum residue limits follows as closely as possible that in ALINORM 76/24 and document CX/PR 77/5.

TABLE OF CONTENTS

Explanatory Notes

Appendix II contains Codex maximum residue limits at Steps 5, 6 and 8 of the Procedure for the Elaboration of Codex Maximum Limits for Pesticide Residues. It also contains some maximum residue limits considered by the Codex Committee on Pesticide Residues and returned to Step 3 of the Procedure. The recommended maximum residue limits arising from the 1975 Joint Meeting on Pesticide Residues have been distributed in circular CL 1976/25 and have also been included in working paper CX/PR 77/5 dated January 1977. Governments will be requested again by means of a circular to send their comments on these Step 3 maximum residue limits. Recommended International Maximum Limits for Pesticide Residues at Step 9 of the Codex Procedure have been published in document Ref. CAC/RS 65-1974 and CAC/RS 71-1976. Recommendations of the 1976 Joint Meeting on Pesticide Residues for further maximum residue limits will be distributed at Step 3 during 1977. It should be noted that Appendix II is divided into 2 parts: Part I contains amendments to Step 9 maximum residue limits proposed by the 1977 Codex Committee on Pesticide Residues; Part II contains maximum residue limits at Steps 3, 5, 6 and 8 as described above.

Abbreviations

MRL - Codex Maximum Residue Limit (or "Tolerance")
TMRL - Temporary Codex Maximum Residue Limit (or Temporary "Tolerance")
JMPR - Joint FAO/WHO Meeting on Pesticide Residues
CCPR - Codex Committee on Pesticide Residues
CAC - Codex Alimentarius Commission
Step - "Step" in the Procedure for the Elaboration of Codex Maximum Limits for Pesticide Residues

Definition of Terms Used in this Document

Pesticide

For the purposes of the Codex Alimentarius, the term "pesticide" means any substance or mixture of substances intended for preventing or controlling any pest and includes any substance or mixture of substances intended for use as a plant-growth regulator, defoliant or dessicant. The term excludes fertilizers and anti-biotics or other chemicals administered to animals for other purposes such as to stimulate their growth or to modify their reproductive behaviour.

Pesticide Residue

For the purposes of the Codex Alimentarius, a "pesticide residue" means any substance or substances in food for man or animals resulting from the use of a "pesticide". It also includes any specified derivatives, such as degradation and conversion products, metabolites and reaction products which are considered to be of toxicological significance.

Codex Maximum Residue Limit (or Codex "Tolerance")

For the purposes of the Codex Alimentarius, a "Codex tolerance" or "Codex maximum residue limit" is the maximum concentration of a pesticide residue that is recommended by the Codex Alimentarius to be legally permitted in or on a food commodity. The concentration is expressed in parts by weight of pesticide residue per million parts by weight of the food or food commodity. In general, a Codex tolerance or Codex maximum residue limit refers to the residue resulting from the use of a pesticide under circumstances designed to protect the food or food commodity against pest attack, according to "good agricultural practice". When a residue results from circumstances not designed to protect the food or food commodity in question against pest attack, the maximum concentration recommended is designated as a "practical residue limit".

PART I - PROPOSED AMENDMENTS TO RECOMMENDED MAXIMUM RESIDUE LIMITS

A. For Consideration by the 12th Session of the Commission in conformity with the Procedure for the Amendment of Codex Standards

48. LINDANE (Syn.: gamma-BHC or gamma-HCH)

Residue: lindane

Food	Limit at Step 9 (mg/kg)	Proposed amendment (mg/kg)	ALINORM 78/24
48.9 Cherries	3	0.5	para 34
48.11 Grapes	3	0.5	para 34
48.12 Plums	3	0.5	para 34

B. For Consideration by the 12th Session of the Commission

37. FENITROTHION

Residue: fenitrothion - changed to "fenitrothion and its oxygen analogue" (para 39, ALINORM 78/24)

65. THIABENDAZOLE

Residue: thiabendazole - changed to "thiabendazole and 5-hydroxy-thiabendazole, expressed as thiabendazole".

64. QUINTOZENE

Residue: quintozene

Changed all "temporary maximum residue limits" to "maximum residue limits" as the ADI is no longer temporary (para 35, ALINORM 78/24).

PART II - MAXIMUM RESIDUE LIMITS AT STEPS 3, 5, 6 and 8 1/ OF THE CODEX PROCEDURE

1. ALDRIN and DIELDRIN (HHDN and HEOD)

Residue: Aldrin and dieldrin, singly or in combination, expressed as dieldrin.

Food	MRL (mg/kg)	Step	Paragraph
1.3 Fruit (except Citrus fruit)	0.05	advanced to 8	49

2. AZINPHOS-METHYL

Residue: Azinphos-methyl — 51

2.1 Fruit	1		
2.2 Apricots	4		
2.3 Grapes	4		50
2.4 Vegetables	0.5		
2.5 Kiwi fruit	4 in the whole fruit		
2.6 Kiwi fruit	0.4 in the edible part	advanced to 8	
2.7 Peaches	4		
2.8 Citrus fruit	2		52
2.9 Melons	2		
2.10 Celery	2		
2.11 Alfalfa (green)	2		
2.12 Pea vines	2		

1/ Excluding MRLs at Step 3 of the Procedure arising from the 1975 Joint Meeting, which have been included in circular CL 1976/25 of November 1976.

2. AZINPHOS-METHYL (Cont.)

Food	MRL (mg/kg)	Step	Paragraph
2.13 Soybean vines	2		
2.14 Broccoli	1		
2.15 Brussels sprout	1		
2.16 Potatoes	0.2		
2.17 Almonds	0.2 on a shell-free basis	advanced to 8	52
2.18 Almond hulls	10		
2.19 Raw cereals	0.2		
2.20 Soybeans (dry)	0.2		
2.21 Cottonseed	0.2		
2.22 Sunflowerseed	0.2		

3. BINAPACRYL

Residue: Binapacryl

3.1 Cherries	0.5	advancec to 8	

4. BROMOPHOS

Residue: Bromophos

	TMRL (mg/kg)		
			53
4.1 Olives	5		
4.2 Olive oil	5		
4.3 Apples	2		
4.4 Lamb's lettuce	2	advanced to 8	
4.5 Leeks	2		
4.6 Radishes	2		
4.7 Pears	1		
4.8 Plums	1		
4.9 Red currants	1	returned to 6	54
4.10 Carrot	1		
4.11 Celery	1		
4.12 French bean	1		
4.13 Savoy cabbage	1		
4.14 Spinach	1		
4.15 Blackberries	0.5		54
4.16 Black currants	0.5		54
4.17 Cherries	0.5		
4.18 Gooseberries	0.5		
4.19 Peaches	0.5		
4.20 Strawberries	0.5		
4.21 Lettuce	0.5		
4.22 Sugarbeet (roots)	0.5		55
4.23 Carcase meat of sheep	0.5 in the carcase fat	advanced to 8	
4.24 Rapeseed	0.2		
4.25 Rapeseed oil	0.2		
4.26 Wheat	10		58
4.27 Broccoli	0.1		56
4.28 Cabbage	0.1		56
4.29 Cauliflower	0.1		56
4.30 Cucumber	0.1		
4.31 Kohlrabi	0.1		
4.32 Onions	0.1		
4.33 Peas	0.1		
4.34 Milk (whole)	0.05 (*)		57

(*) Level at or about the limit of determination.

5. BROMOPHOS -ETHYL 62

Residue: Bromophos-ethyl

Food	MRL (mg/kg)	Step	Paragraph
5.1 Apples	2		
5.2 Pears	2		
5.3 Plums	2		
5.4 Carrot	2		
5.5 Spinach	2		
5.6 Carcase meat of cattle	2 in the carcase fat		
5.7 Red currant	1		
5.8 Brussels sprout	1		
5.9 Sweet cherries	0.5		
5.10 Gooseberries	0.5		
5.11 Peaches	0.5		
5.12 Celeriac	0.5		
5.13 Rapeseed oil	0.5		
5.14 Black currant	0.5	advanced to 8	59
5.15 Lettuce	0.2		
5.16 Strawberries	0.5		59
5.17 Rapeseed	0.1		
5.18 Cabbage	0.5		60
5.19 Kohlrabi	0.5		60
5.20 Kidney bean	0.05		
5.21 Beans (without pod)	0.02 (*)		
5.22 Cauliflower	0.02 (*)		
5.23 Onion	0.02 (*)		
5.24 Sugar beet	0.02 (*)		
5.25 Milk (whole)	0.2 on a fat basis (*)		61
5.26 Milk products	0.2 on a fat basis (*)		61

6. CAPTAFOL

Residue: Captafol

	TMRL (mg/kg)		
6.7 Apricots	15	advanced to 8	63
6.8 Plums	10	advanced to 8	63
6.9 Cranberries	8	returned to 6	64
6.10 Leeks	8	advanced to 8	
6.11 Apples	5	returned to 6	65
6.12 Pears	5	returned to 6	65
6.13 Eggplant (aubergine)	5	advanced to 8	
6.14 Pumpkin	2	advanced to 8	
6.15 Carrot	0.5	advanced to 8	
6.16 Onion	0.5 in the bulb	advanced to 8	
6.17 Potatoes	0.5	advanced to 8	
6.18 Macadamia nut	0.1 on a shell-free basis	advanced to 8	

7. CAPTAN

Residue: Captan

	MRL (mg/kg)		
7.1 Apples	40	returned to 6	1/ 2/ 66
7.2 Cherries	40	returned to 6	1/ 2/ 66
7.3 Pears	30	returned to 6	1/ 2/ 66
7.17 Raisins	5	advanced to 8	
7.18 Blueberries 3/	20	advanced to 8	

(*) Level at or about the limit of determination.

1/ Fourth round of government comments.

2/ Referred to the JMPR for consideration on the basis of data to be supplied by governments.

3/ Blueberry (or Huckleberry) includes the following varieties: V. corymbosum L., V. angustifolium Ait., V. ashei Reade, etc.

7. CAPTAN (Cont.)

Food	MRL (mg/kg)	Step	Paragraph
7.19 Black currant	20		
7.20 Red currants	20	advanced to 8	
7.21 Spinach	20		
7.22 Endive	15		

8. CARBARYL — 37, 38, 67

Residue: Carbaryl

8.37 Animal feedstuffs (green): alfalfa, bean and pea vines, clover, corn forage, cow pea foliage, grasses, peanut hay, sorghum forage, soybean vine, sugar beet tops	100	returned to 6	68
8.38 Cherries	10		
8.39 Plums	10		
8.40 Sorghum	10		
8.41 Cranberries	7		
8.42 Pears	5		
8.43 Beet roots	2		
8.44 Carrot	2		
8.45 Parsnip	2	advanced to 8	
8.46 Radish	2		
8.47 Rutabagas	2		
8.48 Peanuts (whole in the shell)	2		
8.49 Cow pea	1		
8.50 Soybean (dry)	1		
8.51 Eggs 1/	0.5 on a shell-free basis		
8.52 Sugar beet	0.2		
8.53 Milk	0.1 (*)	advanced to 5	JMPR 1975
8.54 Milk products	0.1 (*)	advanced to 5	JMPR 1975

11. CARBOPHENOTHION

Residue: Total residue of carbophenothion, its sulphoxide and sulphone, together with their corresponding oxygen analogues, if present, expressed as carbophenothion.

	TMRL (mg/kg)		
11.1 Citrus fruit	2		
11.2 Spinach	2		
11.3 Carcase meat of cattle	1 in the carcase fat		
11.4 Carcase meat of sheep	1 in the carcase fat		
11.5 Apricots	1		
11.6 Nectarines	1		
11.7 Peaches	1	retained at 7	70
11.8 Prunes	1		
11.9 Apples	0.5		
11.10 Pears	0.5		
11.11 Broccoli	0.5		
11.12 Brussels sprout	0.5		
11.13 Cauliflower	0.5		
11.14 Olive oil	0.2		
11.15 Olives (unprocessed)	0.1		

(*) Level at or about the limit of determination.

1/ The term "eggs" covers egg white plus egg yolk and, therefore, includes products such as fresh whole eggs or whole egg pulp.

11. CARBOPHENOTHION (Cont.)

Food	TMRL (mg/kg)	Step	Paragraph
11.16 Sugar beet	0.1		
11.17 Milk	0.1 on a fat basis		
11.18 Milk products	0.1 on a fat basis		
11.19 Potato	0.02 (*)	retained at 7	70
11.20 Rapeseed	0.02 (*)		
11.21 Walnut	0.02 on a shell-free basis (*)		
11.22 Pecans	0.02 on a shell-free basis (*)		

12. CHLORDANE

Residue: Combined residues of cis- and trans-chlordane and, in the case of animal products, combined residues of cis- and trans-chlordane and "oxychlordane".

	MRL (mg/kg)		
12.16 Potatoes	0.3		
12.17 Sweet potato	0.3		
12.18 Rutabaga	0.3		
12.19 Turnip	0.3		
12.20 Parsnip	0.3		
12.21 Radish	0.3		
12.22 Asparagus	0.2		
12.23 Broccoli	0.2	returned to 6 1/	71
12.24 Brussels sprout	0.2		
12.25 Cabbage	0.2		
12.26 Celery	0.2		
12.27 Cauliflower	0.2		
12.28 Mustard greens	0.2		
12.29 Spinach	0.2		
12.30 Swiss chard	0.2		
12.31 Lettuce	0.2		
12.32 Collard (Colewort)	0.02		
12.35 Carcase meat	0.05 in the carcase fat 2/		
12.38 Almonds	0.1		
12.39 Bananas	0.1		
12.40 Figs	0.1		
12.41 Filberts	0.1		
12.42 Guavas	0.1		
12.43 Mangoes	0.1	returned to 6	72
12.44 Olives	0.1		
12.45 Passion fruit	0.1		
12.46 Papayas	0.1		
12.47 Pecans	0.1		
12.48 Pomegranates	0.1		
12.49 Strawberries	0.1		
12.50 Walnuts	0.1		

13. CHLORDIMEFORM 73

Residue: Sum of chlordimeform and its metabolites determined as 4-chloro-o-toluidine and expressed as chlordimeform.

	TMRL (mg/kg)	
13.1 Pears	5 3/	returned to 6

(*) Level at or about the limit of determination.
1/ Returned for fourth round of government comments.
2/ Practical Residue Limit.
3/ Change proposed by the 1975 JMPR: 10; see para 150 CAC Report 11th session (ALINORM 76/44).

15. CHLORMEQUAT 1/

Residue: Chlormequat cation.

Food		MRL (mg/kg)	Step	Paragraph
15.1	Oat	10	Returned to 6	74
15.2	Rye	5	Advanced to 6	
15.3	Wheat	5	Returned to 6	
15.4	Pears	3	Advanced to 6	
15.5	Grapes	1	Advanced to 6	
15.6	Raisin and other dried vine fruits	1	Advanced to 6	
15.7	Milk	0.1 (*)	Advanced to 6	
15.8	Milk products	0.1 (*)	Advanced to 6	

16. CHLOROBENZILATE

Residue: Chlorobenzilate 75

16.6	Apples	5 2/	Returned to 6
16.8	Grapes	2	Returned to 6
16.9	Tomato	0.2	Returned to 6
16.10	Milk (whole)	0.05 (*)	Returned to 6

17. CHLORPYRIFOS 76

Residue: Chlorpyrifos

17.1	Carcase meat of cattle	2 in the carcase fat	Advanced to 8
17.2	Apples	1	
17.3	Chinese cabbage	1	
17.4	Grapes	1	
17.5	Kale	1	
17.6	Pears	0.5	
17.7	Carrot	0.5	
17.8	Tomato	0.5	
17.9	Beans	0.2	
17.10	Eggplant (Aubergine)	0.2	
17.11	Peppers	0.5	
17.12	Raspberries	0.2	
17.13	Carcase meat of sheep	0.2 in the carcase fat	
17.14	Lettuce	0.1	
17.15	Sugar beet	0.05 3/	
17.16	Rice in the husk	0.1	
17.17	Celery	0.05	
17.18	Cottonseed	0.05	
17.19	Cottonseed oil (crude)	0.05	
17.20	Mushrooms	0.05	
17.21	Onion	0.05	
17.22	Cauliflower	0.01 (*)	
17.23	Red cabbage	0.01 (*)	
17.24	Potatoes	0.01 (*)	
17.25	Milk	0.01 on a fat basis (*) 4/	
17.26	Milk products	0.01 on a fat basis (*) 4/	

(*) Level at or about the limit of determination.
1/ Usually as the chloride.
2/ See para 150, CAC Report 11th Session (ALINORM 76/44).
3/ Changed to 0.05 by the 1975 JMPR.
4/ Change proposed by the 1975 JMPR: milk and milk products 0.1 (on a fat basis).

17. CHLORPYRIFOS (Cont.)

Food	MRL (mg/kg)	Step	Paragraph
17.27 Citrus fruit	0.3	advanced to 5	JMPR 1974
17.28 Turkey	0.2 in skin and carcase fat	advanced to 8	JMPR 1975 78
17.29 Poultry	0.1 in the carcase fat	advanced to 8	JMPR 1975 78
17.30 Eggs 1/	0.01 on a shell-free basis (*)	advanced to 5	JMPR 1975 79

18. COUMAPHOS

Residue: Coumaphos and its oxygen analogue, expressed as coumaphos.

Food	TMRL (mg/kg)	Step	Paragraph
18.7 Milk	0.5 on a fat basis	advanced to 8	
18.8 Milk products	0.5 on a fat basis	advanced to 8	

20. 2,4 D

Residue: 2,4 D

Food	MRL (mg/kg)	Step	Paragraph
20.1 Barley	0.02 2/	returned to 6	80
20.2 Oat	0.02 2/	returned to 6	80
20.3 Rye	0.02 2/	returned to 6	80
20.4 Wheat	0.02 2/	returned to 6	80
20.5 Citrus fruit	2	advanced to 5	JMPR 1974 81
20.6 Potatoes	0.2	advanced to 5	JMPR 1974 81
20.7 Milk	0.05 (*)	advanced to 5	JMPR 1974 81
20.8 Milk products	0.05 (*)	advanced to 5	JMPR 1974 81
20.12 Meat	0.05 (*)	advanced to 5	JMPR 1975 82
20.13 Eggs 1/	0.05 on a shell-free basis (*)	advanced to 5	JMPR 1975 82

21. DDT — 83, 84

Residue: DDT, DDD and DDE, singly or in any combination 3/.

21.4 Apples	7	returned to 6 4/
21.5 Apricots	7	
21.6 Pears	7	
21.7 Peaches	7	
21.8 Small fruits	7	
21.9 Strawberries	1	
21.10 Vegetables	7	
21.11 Root vegetables	1	

(*) Level at or about the limit of determination.
1/ See footnote 1/ on page 43 of this report.
2/ Change proposed by the 1975 JMPR: raw grain 0.2.
3/ Codex maximum residue limits are subject to regular review.
4/ Returned for fifth round of government comments and referred to the JMPR for reconsideration on the basis of data to be supplied by governments.

21. DDT (Cont.)

Food	MRL (mg/kg)	Step	Paragraph
21.12 Carcase meat	7 in the carcase fat 1/	advanced to 8	85
21.13 Poultry	7 in the carcase fat 1/	advanced to 8	85
21.14 Cherries	3.5	returned to 6 2/	
21.15 Citrus fruit	3.5		
21.16 Plums	3.5		
21.17 Tropical fruit	3.5		
21.18 Nuts (shelled)	1		

26. DICOFOL

Residue: Dicofol

26.1	Fruit (except strawberries)	5	advanced to 8	
26.2	Vegetables (except cucumbers, gherkins, tomatoes)	5	advanced to 8	
26.3	Hops (dried)	5	advanced to 8	
26.4	Tea (dry manufactured)	5	advanced to 8	
26.5	Cucumber	2	advanced to 5	JMPR 1974 87
26.6	Gherkin	2	advanced to 5	JMPR 1974 87
26.7	Strawberries	1	advanced to 5	JMPR 1974 87
26.8	Tomatoes	1	advanced to 5	JMPR 1974 87

27. DIMETHOATE 88

Residue: Dimethoate and its oxygen analogue, expressed as dimethoate, from the use of formothion and/or dimethoate and/or omethoate.

27.5	Strawberries	1	advanced to 8	89
27.6	Black currants	2	advanced to 8	

28. DIOXATHION

Residue: cis- and trans- isomers of principal active ingredient, determined and expressed as sum of both. 3/

28.10 Milk	0.2 on a fat basis	advanced to 8	
28.11 Milk products	0.2 on a fat basis		
28.12 Apricots	0.1 (*)		
28.13 Cherries	0.1 (*)		
28.14 Peaches	0.1 (*)		
28.15 Plums	0.1 (*)		

30. DIPHENYLAMINE

Residue: Diphenylamine

30.1 Apples	10	returned to 6 4/	90

(*) Level at or about the limit of determination.
1/ Practical Residue Limit.
2/ Returned for fifth round of government comments and referred to the JMPR for reconsideration on the basis of data to be supplied by governments.
3/ Tolerances are based on residues likely to be found at harvest or slaughter.
4/ Referred to the JMPR for possible re-evaluation in the light of any new toxicological information. (See para 146 of the CAC report 11th session, ALINORM 76/44).

31. DIQUAT 1/ 91, 92

Residue: Diquat cation

Food	MRL (mg/kg)	Step	Paragraph
31.5 Beans	0.5	advanced to 8	
31.6 Sunflowerseed	0.5	advanced to 8	
31.8 Potato	0.2	advanced to 8	
31.10 Rice (polished)	0.2	advanced to 8	
31.15 Barley	5	returned to 6	93
31.16 Poppyseed	5	advanced to 8	
31.17 Wheat	2	returned to 6	93
31.18 Cottonseed	1	advanced to 8	
31.19 Wheat flour	0.2	returned to 6	93
31.20 Sugar beet	0.1		
31.21 Vegetables	0.05 (*)		
31.22 Milk (whole)	0.01 (*)	advanced to 8	
31.23 Meat	0.05 (*)		
31.24 Meat products	0.05 (*)		

32. ENDOSULFAN

Residue: Determined and expressed as total endosulfan A and B and endosulfan sulphate.

32.7 Carrots	0.2		
32.8 Potatoes	0.2		
32.9 Sweet potatoes	0.2		
32.10 Onions	0.2		
32.11 Carcase meat	0.2 on a fat basis 2/	advanced to 5	JMPR 1974 94
32.12 Milk	0.5 on a fat basis 2/		
32.13 Milk products	0.5 on a fat basis 2/		

33. ENDRIN

Residue: Combined residues of endrin and delta-keto-endrin.

33.11 Poultry	1 in the carcase fat 2/	advanced to 8	
33.12 Eggs 3/	0.2 on a shell-free basis 2/	advanced to 8	
33.14 Carcase meat	0.1 in the carcase fat 2/	advanced to 5	JMPR 1974

34. ETHION 96, 97

Residue: Determined as ethion and its oxygen analogue and expressed as ethion

34.4 Apples	2		
34.5 Citrus fruit	2		
34.6 Plums	2		
34.7 Strawberries	2		
34.8 Nectarines	1	advanced to 8	
34.9 Peaches	1		
34.10 Pears	2		
34.11 Apricots	0.1 (*)		
34.12 Cherries	0.1 (*)		

(*) Level at or about the limit of determination.
1/ As dichloride, dibromide or possibly other salts.
2/ Practical Residue Limit.
3/ See footnote 1/ on page 43 of this report.

34. ETHION (Cont.)

Food	MRL (mg/kg)	Step	Paragraph
34.13 Almonds	0.1) on a		
34.14 Chestnuts	0.1) shell-		
34.15 Filberts	0.1) free		
34.16 Pecans	0.1) basis		
34.17 Walnuts	0.1) (*)		
34.18 Beans	2		
34.19 Melons	0.2		
34.20 Tomato	2		
34.21 Eggplant (aubergine)	1		
34.22 Garlic	1		
34.23 Onion	1		
34.24 Pimento	1		
34.25 Peppers	1		
34.26 Cucumber	0.5		
34.27 Squash	0.5		
34.28 Cottonseed	0.5		
34.29 Maize	0.05 in the kernel (*)	advanced to 8	
34.30 Edible offal of cattle	1		
34.31 Carcase meat of goats	0.2)in the		
34.32 Carcase meat of horses	0.2)carcase		
34.33 Carcase meat of pigs	0.2)fat (*)		
34.34 Carcase meat of sheep	0.2)		
34.35 Poultry	0.2)		
34.36 Edible offal of goats	0.2 (*)		
34.37 Edible offal of horses	0.2 (*)		
34.38 Edible offal of pigs	0.2 (*)		
34.39 Edible offal of sheep	0.2 (*)		
34.40 Edible offal of poultry	0.2 (*)		
34.41 Milk	0.5 on a fat basis		98
34.42 Milk products	0.5 on a fat basis		98
34.43 Eggs 1/	0.2 on a shell-free basis (*)		

36. FENCHLORFOS

Residue: To be determined as fenchlorfos and its oxygen analogue and expressed as fenchlorfos.

36.3 Milk	2 on a fat basis		
36.4 Milk products	2 on a fat basis		
36.5 Carcase meat of cattle	10 in the carcase fat		99
36.6 Carcase meat of goat	10 in the carcase fat	advanced to 8	99
36.7 Carcase meat of sheep	10 in the carcase fat		99
36.8 Carcase meat of pigs	2 in the carcase fat		
36.9 Poultry	0.01 (*)		

(*) Level at or about the limit of determination.
1/ See footnote 1/ on page 43 of this report.

37. FENITROTHION

Residue: Fenitrothion and its oxygen analogue, expressed as fenitrothion.

Food	MRL (mg/kg)	Step	Paragraph
37.12 Wheat bran	20		
37.13 Wheat	10		
37.14 Wheat flour (whole meal)	5	advanced to 5	JMPR 1974
37.15 Peaches	2		100
37.16 Wheat flour (white)	1		
37.17 Cabbage	0.5		
37.18 Rice in the husk	10	returned to 3	JMPR 1974 101
37.19 Peas	0.5		
37.20 Strawberries	0.5		
37.21 Bread (white)	0.2		
37.22 Leeks	0.2		
37.23 Oranges	0.2	advanced to 5	JMPR 1974
37.24 Radishes	0.2		102
37.25 Cauliflower	0.1		
37.26 Eggplant	0.1		
37.27 Pears	0.1		
37.28 Peppers	0.1		
37.29 Rice (hulled or milled)	1	returned to 3	JMPR 1974 101
37.30 Soybeans (dry)	0.1		
37.31 Cucumbers	0.05 (*)	advanced to 5	JMPR 1974
37.32 Onions	0.05 (*)		
37.33 Potatoes	0.05 (*)		

38. FENSULFOTHION

Residue: Fensulfothion, and its oxygen analogue, and their sulphones, determined and expressed as fensulfothion.

38.1	Maize (grain), including kernels of field corn and popcorn	0.1	
38.2	Onion	0.1	
38.3	Potato	0.1	
38.4	Swede (Rutabaga)	0.1 (roots)	
38.5	Tomato	0.1	
38.6	Peanuts	0.05 on a shell-free basis (*)	advanced to 8 103
38.7	Pineapple	0.05 (*)	
38.8	Sugar beet	0.1	
38.9	Bananas	0.02 (*)	
38.10	Carcase meat of cattle	0.02 in the carcase fat (*)	
38.11	Carcase meat of goats		
38.12	Carcase meat of sheep		
38.13	Edible offal of cattle	0.02 (*)	
38.14	Edible offal of goats	0.02 (*)	
38.15	Edible offal of sheep	0.02 (*)	

(*) Level at or about the limit of determination.

39. FENTHION 104

Residue: Fenthion and its major metabolites, determined separately or together and expressed as fenthion.

Food	TMRL (mg/kg)	Step	Paragraph
39.1 Apples	2		
39.2 Peaches	2		
39.3 Cherries	2		
39.4 Lettuce	2		
39.5 Carcase meat	2 in the carcase fat		
39.6 Cabbage	1		
39.7 Cauliflower	1		
39.8 Olives	1	returned to 6 1/	
39.9 Olive oil	1		
39.10 Grapes	0.5		
39.11 Citrus fruit	0.5		
39.12 Peas	0.5		
39.13 Squash	0.2		
39.14 Wheat	0.1		
39.15 Rice	0.1		
39.16 Milk products	0.1 on a fat basis		
39.17 Milk (whole)	0.05		

40. FENTIN

Residue: Expressed as fentin hydroxide, excluding inorganic tin and di- and mono-phenyl tin.

Food	MRL (mg/kg)	Step	Paragraph
40.7 Cocoa beans	0.1 (*)		
40.8 Coffee (raw beans)	0.1 (*)		
40.9 Rice (in the husk)	0.1 (*)	advanced to 8	
40.10 Pecans	0.05 on a shell-free basis (*)		

41. FOLPET

Residue: Folpet

41.14 Lettuce	15	advanced to 8	

42. FORMOTHION

Residue: Determined as formothion (see also 27. DIMETHOATE).

42.1 Citrus fruit	0.2	advanced to 8	105

43. HEPTACHLOR

Residue: Combined residues of heptachlor and its epoxide, expressed as heptachlor.

43.7 Sugar beet	0.05 2/	returned to 6 3/	106
43.16 Poultry	0.2 in the carcase fat 2/	advanced to 8	

(*) Level at or about the limit of determination.
1/ Referred to the JMPR for reconsideration on the basis of toxicological data, use pattern and residue data provided by governments.
2/ Practical Residue Limit.
3/ Referred to the JMPR.

48. LINDANE (Syn.: gamma-BHC or gamma-HCH) 107

Residue: Lindane

Food	TMRL (mg/kg)	Step	Paragraph
48.9 Cherries	0.5	returned to 3	34
48.11 Grapes	0.5	returned to 3	34
48.12 Plums	0.5	returned to 3	34
48.15 Beans (dried)	1	advanced to 8	109
48.16 Apples	0.5	advanced to 8	110
48.17 Pears	0.5	advanced to 8	110
48.18 Sugar beet (roots)	0.1	advanced to 8	110
48.19 Sugar beet (tops)	0.1	advanced to 8	110

49. MALATHION

Residue: Combined residues of malathion and malaoxon.

Food	MRL (mg/kg)	Step	Paragraph
49.6 Lettuce	8		111, 112
49.7 Endive	8		
49.8 Cabbage	8		
49.9 Spinach	8		
49.10 Blackberries	8		
49.11 Raspberries	8	advanced to 8	
49.12 Cherries	6		
49.13 Peaches	6		
49.14 Plums	6		111
49.15 Broccoli	5		
49.18 Turnip	3		111
49.19 Apples	2		111, 112
49.21 Celery	1		111
49.33 Grapes	8		

50. MANCOZEB 113, 114, 115, 157

Residue: Mancozeb 1/

Food	TMRL (mg/kg)	Step	Paragraph
50.1 Potatoes	1 2/ 3/		
50.2 Beans (in the pod)	3 (0.1)		
50.3 Apples	2 (0.02)		
50.4 Pears	2 (0.02)		
50.5 Celery	2 (0.01) 3/	returned to 3	
50.6 Lettuce	2 (0.01) 3/		
50.7 Tomatoes	1 (0.05)		
50.8 Carrots	0.2 (0.01) 3/		
50.9 Sweet corn	0.2 (0.01) 3/4/		
50.10 Banana (pulp)	0.05 (0.01) 3/		

51. METHIDATHION

Residue: Methidathion 5/

Food	MRL (mg/kg)	Step	Paragraph
51.1 Citrus fruit	2	advanced to 8	116
51.2 Apples	0.5	advanced to 8	116

1/ Residue based on and determined as ethylenediamine moiety and of ethylenethiourea (ETU). Limits for ETU are given in brackets. Neither limit should be exceeded in a given sample.
2/ Changed to "0.05 (0.01)" by the 1974 JMPR.
3/ Level at or about the limit of determination (refers to ETU).
4/ Cob and kernels, i.e. with husks and silks removed.
5/ Residues in animal products from feeding on treated forage and plant products.

51. METHIDATHION (Cont.)

Food	MRL (mg/kg)	Step	Paragraph
51.3 Pears	0.5		
51.4 Apricots	0.2		
51.5 Cherries	0.2		
51.6 Nectarines	0.2		
51.7 Peaches	0.2		
51.8 Plums	0.2		
51.9 Grapes	0.2		
51.10 Cabbage	0.2		
51.11 Cauliflower	0.2		
51.12 Leafy vegetables	0.2		
51.13 Beans	0.1		
51.14 Peas	0.1		
51.15 Tomato	0.1		
51.16 Maize (grain)	0.1		
51.17 Sorghum (grain)	0.1		
51.18 Cottonseed oil (crude)	1	advanced to 8	116
51.19 Cottonseed	0.2		
51.20 Hops (dried)	3		
51.21 Tea (dry, manufactured)	0.1		
51.22 Potatoes	0.02 (*)		
51.23 Meat of cattle	0.02 (*)		
51.24 Meat of sheep	0.02 (*)		
51.25 Meat of pigs	0.02 (*)		
51.26 Poultry	0.02 (*)		
51.27 Fat of cattle	0.02 (*)		
51.28 Fat of sheep	0.02 (*)		
51.29 Fat of pigs	0.02 (*)		
51.30 Poultry fat	0.02 (*)		
51.31 Edible offal of cattle	0.02 (*)		
51.32 Edible offal of sheep	0.02 (*)		
51.33 Edible offal of pigs	0.02 (*)		
51.34 Edible offal of poultry	0.02 (*)		
51.35 Milk	0.02 (*)		
51.36 Milk products	0.02 (*)		
51.37 Eggs 1/	0.02 on a shell-free basis (*)		

53. MEVINPHOS

Residue: cis- and trans- isomers determined and expressed as sum of both.

53.1 Broccoli	1		
53.2 Brussels sprout	1		
53.3 Cabbage	1		
53.4 Cauliflower	1		
53.5 Collard	1		
53.6 Cherries	1		
53.7 Strawberries	1		
53.8 Apples	0.5		
53.9 Grapes	0.5	advanced to 8	
53.10 Peaches	0.5		
53.11 Lettuce	0.5		
53.12 Spinach	0.5		
53.13 Cucumber	0.2		
53.14 Tomato	0.2		
53.15 Apricots	0.2		
53.16 Citrus fruit	0.2		
53.17 Pears	0.2		

(*) Level at or about the limit of determination.
1/ See footnote 1/ on page 43 of this report.

53. MEVINPHOS (Cont.)

Food	MRL (mg/kg)	Step	Paragraph
53.18 Carrot	0.1	advanced to 8	
53.19 Beans	0.1		
53.20 Onion	0.1		
53.21 Peas	0.1		
53.22 Potatoes	0.1		
53.23 Turnip	0.1		
53.24 Melons	0.05		

54. MONOCROTOPHOS 117

Residue: Monocrotophos

54.1 Apples	1	advanced to 8	
54.2 Pears	1		
54.3 Hops (dried)	1		
54.4 Citrus fruit	0.2		
54.5 Tomato	1		
54.6 Beans	0.2		
54.7 Brussels sprout	0.2		
54.8 Cabbage	0.2		
54.9 Cauliflower	0.2		
54.10 Onion	0.1		
54.11 Peas	0.1		
54.12 Coffee (raw beans)	0.1		
54.13 Cottonseed	0.1		
54.14 Carrot	0.05 (*)		
54.15 Maize (grain)	0.05 (*)		
54.16 Potatoes	0.05 (*)		
54.17 Turnip	0.05 (*)		
54.18 Soya beans	0.05 (*)		
54.19 Sugar beet	0.05 (*)		
54.20 Cottonseed oil	0.05 (*)		
54.21 Meat of cattle 1/	0.02 (*)		
54.22 Meat of goats 1/	0.02 (*)		
54.23 Meat of pigs 1/	0.02 (*)		
54.24 Meat of sheep 1/	0.02 (*)		
54.25 Poultry 1/	0.02 (*)		
54.26 Edible offal of cattle 1/	0.02 (*)		
54.27 Edible offal of goats 1/	0.02 (*)		
54.28 Edible offal of pigs 1/	0.02 (*)		
54.29 Edible offal of sheep 1/	0.02 (*)		
54.30 Edible offal of poultry 1/	0.02 (*)		
54.31 Milk 1/	0.02 (*)		
54.32 Milk products 1/	0.02 (*)		
54.33 Eggs 1/ 2/	0.02 (*) on a shell-free basis		

55. OMETHOATE 3/ 118

Residue: Omethoate

Food	TMRL (mg/kg)	Step	Paragraph
55.1 Apples	2	advanced to 8 4/	
55.2 Apricots	2		

(*) Level at or about the limit of determination.
1/ Residues in products of animal origin arise from feeding treated plant products.
2/ See footnote 1/ on page 43 of this report.
3/ See also Dimethoate, the limits for which apply to Omethoate.
4/ Referred to the JMPR to study omethoate, dimethoate and formothion together (metabolism, resulting from the use of each of these compounds).

55. OMETHOATE (Cont.)

Food		TMRL (mg/kg)	Step	Paragraph
55.3	Cherries	2	)	
55.4	Grapes	2	)	
55.5	Peaches	2	) advanced to 8 1/	
55.6	Pears	2	)	
55.7	Plums	2	)	

56. ORTHO-PHENYLPHENOL (Syn.: 2-phenylphenol) and its SODIUM SALT 119

Residue: 2-phenylphenol and sodium 2-phenylphenate, expressed as 2-phenylphenol.

Food		MRL (mg/kg)	Step	Paragraph
56.3	Carrot	20	advanced to 8	
56.5	Apples	25	advanced to 8	

57. PARAQUAT 2/ 120, 121

Residue: Paraquat cation

57.2	Potatoes	0.2	)	
57.5	Rice in the husk	10	)	
57.6	Olives (unprocessed)	1	)	
57.7	Rice (polished)	0.5	)	
57.8	Sorghum	0.5	) advanced to 8	
57.9	Maize	0.1	)	
57.10	Soya beans	0.1	)	
57.11	Vegetables	0.05 (*)	)	
57.12	Milk (whole)	0.01 (*)	)	

58. PARATHION

Residue: Combined residues of parathion and paraoxon.

58.3	Citrus fruit	1	advanced to 8	

59. PARATHION-METHYL 122

Residue: Combined residues of parathion-methyl and its oxygen analogue.

Food		TMRL (mg/kg)	Step	Paragraph
59.1	Cole crops	0.2	)	
59.2	Cantaloupe	0.2	)	
59.3	Melons	0.2	) advanced to 8	
59.4	Cucumber	0.2	)	
59.6	Other vegetables	1	returned to 6 3/	
59.7	Other fruit	0.2	returned to 6 3/	

60. PHOSALONE 123

Residue: Phosalone

Food		MRL (mg/kg)	Step	Paragraph
60.1	Apples	5	)	
60.2	Grapes	5	) advanced to 8	
60.3	Peaches	5	)	

(*) Level at or about the limit of determination.
1/ Referred to the JMPR to study omethoate, dimethoate and formothion together (metabolism residues resulting from the use of each of these compounds).
2/ As dichloride, di-(methylsulphate) and possibly other salts.
3/ Returned for a fourth round of government comments and referred to the JMPR.

60. PHOSALONE (Cont.)

Food	MRL (mg/kg)	Step	Paragraph
60.4 Plums	5		
60.5 Cherries	10		
60.6 Pears	2		
60.7 Beet root	2		
60.8 Hops (dried)	2		
60.9 Citrus fruit	1		
60.10 Strawberries	1		
60.11 Broccoli	1		
60.12 Brussels sprout	1		
60.13 Cabbage	1	advanced to 8	
60.14 Cucumber	1		
60.15 Lettuce	1		
60.16 Peas	1		
60.17 Tomato	1		
60.18 Chestnuts	0.1 on a shell-free basis (*)		
60.19 Pecans	0.1 on a shell-free basis (*)		
60.20 Potatoes	0.1 (*)		
60.21 Rapeseed	0.1 (*)		

62. PIPERONYL BUTOXIDE

Residue: Piperonyl butoxide

62.7 Vegetables	8 1/		
62.8 Peanuts	8 1/	advanced to 8	124
62.9 Fish (dried)	20		

63. PYRETHRINS

Residue: Sum of Pyrethrins I and II and other structurally related insecticidal ingredients of pyrethrum.

63.8 Peanuts	1 in the kernels 1/	advanced to 8	
63.9 Fish (dried)	3	advanced to 8	

64. QUINTOZENE 125

Residue: Quintozene, including hexachlorobenzene, pentachloroaniline, methyl pentachlorophenyl-sulfide and pentachlorobenzene.

64.2 Lettuce	3 2/	returned to 6 3/	125
64.3 Peanuts	2 in the kernels 2/	returned to 6 3/	125
64.4 Navy beans	0.2	returned to 6 3/	125
64.5 Potatoes	0.2	returned to 6 3/	125

66. TRICHLORFON

Residue: Trichlorfon

Food	TMRL (mg/kg)	Step	Paragraph
66.23 Tomato	0.2	returned to 6	127

(*) Level at or about the limit of determination.
1/ Temporary Maximum Residue Limit.
2/ Erroneously mentioned as 0.3 ppm in the 1975 report of the JMPR.
3/ Referred to the JMPR.

67. CYHEXATIN (Syn.: Tricyclohexylhydroxystannate)

Residue: Tricyclohexyltin hydroxide, excluding organic degradation products and inorganic tin.

Food		TMRL (mg/kg)	Step	Paragraph
67.3	Citrus fruit	2		128
67.4	Tea (dry, manufactured)	2		129
67.5	Meat	0.2 1/		129
67.6	Milk	0.05 on a fat basis (*) 1/	advanced to 8	129
67.7	Milk products	0.05 on a fat basis (*) 1/		
67.8	Tomatoes	2		
67.9	Gherkins	1		
67.10	Cucumbers	0.5	advanced to 5	130
67.11	Melons	0.5		
67.12	Bell peppers	0.5		

70. BROMOPROPYLATE

Residue: Bromopropylate

Food		MRL (mg/kg)	Step	Paragraph
70.1	Citrus fruit	5		
70.2	Citrus fruit (pulp)	0.2		
70.3	Apples	5		
70.4	Pears	5		
70.5	Grapes	5		
70.6	Strawberries	5		
70.7	Cherries	5		
70.8	Nectarines	5	advanced to 5	
70.9	Peaches	5		
70.10	Plums	5		131
70.12	Bananas	5		
70.13	Bananas (pulp)	0.2		
70.14	Vegetables	1		
70.15	Cottonseed	1		
70.16	Tea	5		
70.17	Hops (dried)	5		

73. DEMETON-S-METHYL

Residue: Combined residues of demeton-S-methyl, oxydemeton-methyl and demeton-S-methyl sulphone.

73.1	Citrus fruit	0.5		
73.2	Apples	1		
73.3	Pears	0.5		
73.4	Blackberries	0.5		
73.5	Black currant	2		
73.6	Red currant	2		
73.7	Gooseberries	0.5	advanced to 5	
73.8	Grapes	2		
73.9	Raspberries	0.5		
73.10	Strawberries	0.5		
73.11	Peaches	1		
73.12	Plums	1		
73.13	Water melon	0.2		
73.14	Cantaloupe	0.2		
73.15	Potatoes	0.2		

(*) Level at or about the limit of determination.
1/ Temporary Practical Residue Limit.

73. DEMETON-S-METHYL (Cont.)

Food	MRL (mg/kg)	Step	Paragraph
73.16 Sugar beet	0.1		
73.17 Turnip	0.1		
73.18 Lettuce	0.5		
73.19 Broccoli	0.2		
73.20 Brussels sprouts	0.2		
73.21 Cabbages	0.2		
73.22 Cauliflower	0.2		
73.23 Beans	0.2		
73.24 Peas	0.2		
73.25 Cucumber	0.2		
73.26 Eggplant	0.2		
73.27 Pumpkin	0.2		
73.28 Summer squash	0.5		
73.29 Winter squash	0.2		
73.30 Raw cereals	0.2	advanced to 5	
73.31 Nuts (shelled)	0.05 (*)		
73.32 Cottonseed	0.1		
73.33 Meat of cattle	0.05 (*)		
73.34 Meat of pigs	0.05 (*)		
73.35 Meat of sheep	0.05 (*)		
73.36 Poultry	0.05 (*)		
73.37 Fat of cattle	0.05 (*)		
73.38 Fat of pigs	0.05 (*)		
73.39 Fat of sheep	0.05 (*)		
73.40 Fat of poultry	0.05 (*)		
73.41 Milk	0.05 (*)		
73.42 Milk products	0.05 (*)		
73.43 Eggs 1/	0.05 (*) on a shell-free basis		
73.44 Animal feed (green)	5		
73.45 Animal feed (dry)	10		

74. DISULFOTON — 132, 133

Residue: Determined as disulfoton sulphone and demeton-S-sulphone and expressed as disulfoton. 2/

74.1 Pineapple	0.1 (*)		134
74.2 Vegetables (including potatoes and sugar beet roots)	0.5		
74.3 Soya beans (dry)	0.1 (*)		
74.4 Raw grain (except rice and maize)	0.2	advanced to 5	
74.5 Rice in the husk	0.5		
74.6 Pecans	0.1 (*)		
74.7 Peanuts (kernels)	0.1 (*)		
74.9 Coffee beans	0.1 (*)		
74.10 Forage crops (green)	5		

(*) Level at or about the limit of determination.
1/ See footnote 1/ on page 43 of this report.
2/ Change proposed by the 1975 JMPR: total residues of disulfoton, disulfoton sulphoxide, disulfoton sulphone, demeton, demeton sulphoxide and demeton sulphone, expressed as disulfoton.

75. PROPOXUR 136

Residue: Combined residues of main metabolites, expressed as propoxur.

Food	MRL (mg/kg)	Step	Paragraph
75.1 Apples	3		
75.2 Pears	3		
75.3 Blackberries	3		
75.4 Red currants	3		
75.5 Gooseberries	3		
75.6 Strawberries	3		
75.7 Cherries	3		
75.8 Peaches	3		
75.9 Plums	3		
75.10 Other vegetables	3	advanced to 5	
75.11 Root vegetables (including potatoes)	0.5		
75.12 Raw cereals	0.5		
75.13 Rice (hulled)	0.1		
75.14 Cocoa beans	0.05 (*)		
75.15 Meat	0.05 (*)		
75.16 Milk (whole)	0.05 (*)		
75.17 Animal feedstuffs (green)	5		

76. THIOMETON 139

Residue: Determined as thiometon, its sulphoxide or sulphone and expressed as thiometon.

Food	TMRL (mg/kg)	Step	Paragraph
76.1 Apples	0.5		
76.2 Pears	0.5		
76.3 Grapes	0.5		
76.4 Strawberries	0.5		
76.5 Cherries (sweet)	0.5		
76.6 Peaches	0.5		
76.7 Plums	0.5		
76.8 Carrot	0.05 (*)		
76.9 Potatoes	0.05 (*)	advanced to 5	
76.10 Sugar beet	0.05 (*)		
76.11 Lettuce	0.5		
76.12 Beans	0.5		
76.13 Peas (green, in the pod)	0.5		140
76.14 Peppers	0.5		
76.15 Tomato	0.5		
76.16 Raw cereals	0.05 (*)		
76.17 Hops (dry)	2		140

77. THIOPHANATE-METHYL 141

Residue: Total residues of thiophanate-methyl and carbendazim and expressed as carbendazim.

Food	MRL (mg/kg)	Step	Paragraph
77.1 Citrus fruit	10		
77.2 Apples	5		
77.3 Pears	5	advanced to 5	
77.4 Black currant	5		
77.5 Gooseberries	5		

(*) Level at or about the limit of determination.

77. THIOPHANATE-METHYL (Cont.)

Food	MRL (mg/kg)	Step	Paragraph
77.6 Grapes	10		
77.7 Raspberries	10		
77.8 Strawberries	5		
77.9 Cherries	10		
77.10 Peaches	10		
77.11 Plums	2		
77.12 Bananas	1		
77.13 Carrot	5		
77.14 Sugar beet	0.1 (*)		
77.15 Onion	0.1 (*)		
77.16 Lettuce	5		
77.17 Celery	20	advanced to 5	
77.18 Broad bean	2		
77.19 Dwarf bean	2		
77.20 French bean	2		
77.21 Runner bean	2		
77.22 Kidney bean	2		
77.23 Cucumber	0.5		
77.24 Gherkin	2		
77.25 Mushrooms	1		
77.26 Tomato	5		
77.27 Raw cereals	0.1 (*)		
77.28 Sugar beet (tops)	5		

79. AMITROLE

Residue: Amitrole

Food	MRL 1/ (mg/kg)	Step	Paragraph
79.1 Raw agricultural commodities of plant origin	0.02 (*)	advanced to 5	142

80. CHINOMETHIONAT (Syn.: Oxythioquinox)

Residue: Chinomethionat

Food	TMRL (mg/kg)	Step	Paragraph
80.1 Papayas	5 (whole fruit)		
80.2 Papaya pulp	0.1		
80.3 Cucumbers	0.1		
80.4 Gherkins	0.1		
80.5 Gooseberries	0.1		
80.6 Macadamia nuts	0.02 (in the kernels) (*)		
80.7 Currants (black, red, white)	0.1	advanced to 5	JMPR 1974
80.8 Apples	0.5		143
80.9 Grapes	0.1		
80.10 Almonds	0.1 (in the kernels)		
80.11 Avocados	0.1		
80.12 Citrus fruit	0.5		
80.13 Raw cereals	0.1		
80.14 Milk	0.01 (*)		
80.15 Meat	0.05 (*)		

(*) Level at or about the limit of determination.
1/ Conditional. (See 1974 Report of the JMPR).

81. CHLOROTHALONIL 144, 145, 146

Residue: Combined residues of chlorothalonil and 4-hydroxy-2,5,6-trichloro-1,3-benzenedicarbonitrile, expressed as chlorothalonil.

Food	TMRL (mg/kg)	Step	Paragraph
81.1 Peaches	30		
81.2 Currants (red, black, white)	25		
81.3 Celery	15		
81.4 Peppers	10		
81.5 Blackberries	10		
81.6 Raspberries	10		
81.7 Cherries	10		
81.8 Chicory sprouts	10		
81.9 Collards	10		
81.10 Kale	10		
81.11 Endive	10		
81.12 Lettuce (head)	10		
81.13 Broccoli	5		
81.14 Brussels sprouts	5		
81.15 Cabbage	5		
81.16 Cauliflower	5	advanced to 5	JMPR 1974
81.17 Beans (green, in the pod)	5		
81.18 Citrus fruit	5		147
81.19 Onions	5		
81.20 Cranberries	5		
81.21 Cucumbers	5		
81.22 Melons	5		
81.23 Pumpkins	5		
81.24 Squash	5		
81.25 Tomatoes	5		
81.26 Carrots	1		
81.27 Sweet corn	1		
81.28 Sugar beets	1		
81.29 Lima beans	0.5		
81.30 Peanuts (whole)	0.5		
81.31 Peanuts (kernels)	0.1		
81.32 Potatoes	0.1		

82. DICHLOFLUANID

Residue: Dichlofluanid

82.1 Currants (red, black, white)	15		
82.2 Grapes	15		
82.3 Raspberries	15		
82.4 Lettuce	10		
82.5 Strawberries	10		
82.6 Apples	5	advanced to 5	JMPR 1974
82.7 Pears	5		
82.8 Cucumbers	5		
82.9 Peaches	5		
82.10 Beans (green, in the pod)	2		
82.11 Cherries	2		
82.12 Tomatoes	2		148

83. DICLORAN (Syn.: 2,6-dichloro-4-nitrobenzeneamine)

Residue: 2,6-dichloro-4-nitroaniline.

83.1 Cherries	15		
83.2 Peaches	15	advanced to 5	JMPR 1974
83.3 Apricots	10 1/		

1/ Governments are requested to consider the proposal of Australia to increase the TMRL to 15 mg/kg (see para 149).

83. DICLORAN (Cont.)

Food	TMRL (mg/kg)	Step	Paragraph
83.4 Carrots	10		
83.5 Grapes	10		
83.6 Lettuce	10		
83.7 Plums	10		
83.8 Raspberries	10		
83.9 Strawberries	10		
83.10 Blackberries	5	advanced to 5	JMPR 1974
83.11 Currants (red, black, white)	5		
83.12 Beans (French)	2		
83.13 Gherkins	0.5		
83.14 Tomatoes	0.5		
83.15 Nectarines	10		149

84. DODINE

Residue: Dodine

Food	MRL (mg/kg)	Step	Paragraph
84.1 Grapes	5		
84.2 Peaches	5		
84.3 Strawberries	5	advanced to 5	JMPR 1974
84.4 Apples	5		151
84.5 Pears	5		151
84.6 Cherries	2		

85. FENAMIPHOS

Residue: Combined residues of fenamiphos, its sulphoxide and sulphone, expressed as fenamiphos.

85.1 Bananas	0.1		
85.2 Coffee beans (green)	0.1		
85.3 Coffee beans (roasted)	0.1		
85.4 Grapes	0.1		
85.5 Sweet potatoes	0.1		
85.6 Broccoli	0.05 (*)		
85.7 Brussels sprouts	0.05 (*)		
85.8 Cabbage	0.05 (*)		
85.9 Carrots	0.05 (*)	advanced to 5	JMPR 1974
85.10 Cauliflowers	0.05 (*)		
85.11 Citrus fruit	0.05 (*)		
85.12 Cottonseed	0.05 (*)		
85.13 Melons	0.05 (*)		
85.14 Peanut kernels	0.05 (*)		
85.15 Pineapples	0.05 (*)		
85.16 Soybeans (dried)	0.05 (*)		
85.17 Sugar beets	0.05 (*)		
85.18 Potatoes	0.2		152
85.19 Tomatoes	0.2		152

(*) Level at or about the limit of determination.

86. PIRIMIPHOS-METHYL 153, 154

Residue: Combined residues of pirimiphos-methyl, its oxygen analogue and N-desethyl-pirimiphos-methyl, expressed as pirimiphos-methyl.

Food	MRL (mg/kg)	Step	Paragraph
86.1 Wheat bran	20		
86.2 Rice bran	20		
86.3 Wheat	10		
86.4 Rye	10		
86.5 Rice in the husk	10		
86.6 Barley	7		
86.7 Maize	7		
86.8 Oats	7	advanced to 5	
86.9 Wholemeal flour (wheat, rye)	5		
86.10 Rice (hulled)	2		
86.11 Wheat flour (white)	2		
86.12 Bread (wholemeal)	1		
86.13 Rice (polished)	1		
86.14 Bread (white)	0.5		
86.15 Meat	0.05 (*)		
86.16 Milk	0.05 (*)		
86.17 Eggs 1/	0.05 (*)		

(*) Level at or about the limit of determination.
1/ See footnote 1/ on page 43 of this report.

APPENDIX III

REPORT OF THE AD HOC WORKING GROUP ON SAMPLING

The following persons took part in the discussions of the ad hoc Working Group on Sampling:

J.A.R. Bates, United Kingdom (Chairman)
D.C. Abbott, United Kingdom
A. Ambrus, Hungary
G. Becker, Federal Republic of Germany
H.W. Brinkman, The Netherlands
W.P. Cochrane, Canada
J.F. Eades, Ireland
P.A. Greve, The Netherlands
E.D. Magallona, Philippines
R. Mestres, France
T. Stijve, Switzerland
G.M. Telling, United Kingdom
R.H. Thompson, United Kingdom
R. Vaz, Sweden
K. Voldum-Clausen, Denmark
J.R. Wessel, United States of America
H. Frehse, IUPAC

General Remarks

Since the 8th session of the Codex Committee on Pesticide Residues the Working Group has considered comments from a number of Member countries on the proposed draft method of sampling described in ALINORM 76/24, App. V. It noted that these countries welcomed the practical approach of the sampling proposals. The Working Group has now examined a draft embodying these comments and has made several additional clarifications. The recommendations of the Working Group are set out below.

In order that the proposed sampling method should be widely available, the Working Group recommended that it be published as a separate Codex document, preferably with an appropriate introduction, in the next series of Recommended International Maximum Limits for Pesticide Residues.

Recommended Method of Sampling for the Determination of Pesticide Residues

1. OBJECTIVE

For the examination of a lot to discover whether it complies with Codex Maximum Limits for Pesticide Residues, it is necessary to provide a representative sample for analysis. The objective of the sampling procedure is to obtain a final sample representative of the lot in order to determine its average pesticide residue content. The final sample is considered representative of the lot when the procedure outlined below has been followed. The Codex Maximum Residue Limit applies to the final sample.

2. DEFINITIONS

2.1 Lot

An identifiable quantity of goods delivered at one time, having or presumed by the sampling officer to have common properties or uniform characteristics such as the same origin, the same variety, the same consignor, the same packer, the same type of packing or the same mark. Several lots may make up a consignment.

2.2 Consignment

A quantity of material covered by a particular consignment note or shipping document. Lots in the same consignment may be delivered at different times and may have different amounts of pesticide residues.

2.3 Primary Sample

A quantity of material taken from a single place in the lot.

2.4 Bulk Sample

Combined total of all the primary samples taken from the same lot.

2.5 Final Sample

Bulk sample or representative part of the bulk sample to be used for control purposes.

2.6 Laboratory Sample

Sample intended for the laboratory. The final sample may be used as a whole or may be subdivided into representative portions (laboratory sample), if required by national legislation.

3. EMPLOYMENT OF AUTHORIZED SAMPLING OFFICERS

The sample must be taken by officers authorized for the purpose by the appropriate authorities.

4. SAMPLING PROCEDURE

4.1 Material to be Sampled

Each lot which is to be examined must be sampled separately.

4.2 Precautions to be Taken

In the course of taking the primary samples and in all subsequent procedures precautions must be taken to avoid contamination of the samples or any other changes which would adversely affect the amount of residues or the analytical determinations or make the laboratory sample not representative of bulk sample.

4.3 Primary Samples

As far as possible these should be taken throughout the lot. Departures from this requirement must be recorded (see para 7). As far as possible the primary samples should be of similar size and the combined total of all the primary samples (bulk sample) must not be less than that required for the final sample bearing in mind the possible requirement of further subdivision and the provision of adequate laboratory samples. The minimum number of primary samples to be taken is given in the table below:

Weight of lot in kilogrammes	Minimum number of Primary Samples to be taken
< 50	3
51 - 500	5
501 - 2000	10
> 2000 (*)	15

For processed products in cans, bottles, packages or other small containers, especially when the sampling officer does not know the weight of the lot, the following sampling plan can be followed:

Number of cans, packages or containers in the lot	Minimum number of Primary Samples to be taken
1-25	1
26-100	5
101-250	10
>250	15

For homogeneous lots such as bulk liquids, a sample fully representative of the whole is obtained by withdrawing any single sample.

4.4 Preparation of Bulk Sample

The bulk sample is made by uniting and mixing the primary samples.

4.5 Preparation of Final Sample

4.5.1 The bulk sample should, if possible, constitute the final sample.

4.5.2 If the bulk sample is too large, the final sample may be prepared from it by a suitable method of reduction. In this process, however, individual fruits and vegetables must not be cut or divided.

4.6 Preparation of the Laboratory Sample

4.6.1 The final sample should, if possible, be submitted to the laboratory for analysis.

4.6.2 If the final sample is too large to be submitted to the laboratory, a representative subsample must be prepared.

4.6.3 National legislation may require that the final sample be subdivided into two or more portions for separate analyses. Each portion must be representative of the final sample. The precautions in para 4.2 should be observed.

(*) For whole cereals and other materials shipped in bulk, well established alternative sampling procedures are available and may be used provided these are recorded (see para 7).

4.6.4 The minimum amount of material to be submitted to the laboratory, i.e. the size of laboratory sample is as follows:

Commodity	Examples	Minimum Requirements
small or light products unit weight up to about 25 g	berries peas olives parsley	1 kg
medium sized products unit weight usually between 25 and 250 g	apples oranges carrots potatoes	1 kg (at least 10 units)
large sized products unit weight over 250 g	cabbages melons cucumbers	2 kg (at least 5 units)
dairy products	whole milk cheese butter cream	0.5 kg
eggs		0.5 kg (10 units, if whole)
meat, poultry, fat, fish and other fish and animal products		1 kg
oils and fats	cottonseed oil margarine	0.5 kg
cereals and cereal products		1 kg

5. PACKAGING AND TRANSMISSION OF LABORATORY SAMPLES

The laboratory sample must be placed in a clean inert container offering adequate protection from external contamination and protection against damage to the sample in transit. The container must then be sealed in such a manner that unauthorized opening is detectable, and sent to the laboratory as soon as possible taking any necessary precautions against spoilage, e.g. deep frozen foods should be kept deep frozen, perishable samples should be kept cooled or frozen.

6. RECORDS

Each laboratory sample must be correctly identified and should be accompanied by a note giving the nature and origin of the sample and the date and place of sampling, together with any additional information likely to be of assistance to the analyst.

7. DEPARTURES FROM RECOMMENDED SAMPLING PROCEDURE

If, for any reason, there has had to be a departure from the recommended procedures, especially as regards paragraph 4, full details of the procedure actually followed must be recorded in the accompanying note (see para 6).

APPENDIX IV

REPORT OF THE AD HOC WORKING GROUP ON PRIORITY LISTS

Participants

A.F.H. Besemer	- Netherlands (Chairman)
T. Avigdor	- Switzerland
G. Bressau	- Federal Republic of Germany
J.M. Lynes	- United Kingdom
C. Resnick	- Israel
R. Ross	- United States of America
M. Spindler	- Switzerland
J.T. Snelson	- Australia
J.M. Stalker	- Canada
K.C. Walker	- United States of America
B. Watts	- New Zealand
G. Mathys	- EPPO
G. Weidmann	- GIFAP
G. Vettorazzi	- WHO
N. Saito	- FAO
E.E. Turtle	- FAO

1. The Working Group first addressed itself to the selection of compounds for priority consideration using various sources noted as follows:

(a) Priority Lists 1, 2 and 3 from Appendix III of the Report of the 8th Session (ALINORM 76/24, p. 76);

(b) Future work proposals from the report of the 1976 Joint FAO/WHO Meeting of Experts on Pesticide Residues (JMPR);

(c) Submissions from various countries concerning new and other compounds shown to meet the criteria for consideration.

2. The Group reviewed the selection criteria which candidate compounds must meet in order to be placed on the Priority Lists. These criteria are set forth in the report of the Third Session (1968) (ALINORM 69/24). Paragraph 76 of that report states that the compound, when used in accordance with good agricultural practice:

(a) must result in residues;
(b) must affect international trade on a significant scale;
(c) should be a matter of public health concern; or
(d) be creating commercial problems.

3. The Group confirmed that one further parameter for selection was necessary to facilitate its decisions in selecting candidate compounds for priority listing. If residue limits for a given compound are already under consideration at some stage of the Codex Procedure it will not be included in the priority listings. Countries should note that if a compound is under consideration in the Codex Procedure but not for a particular crop or commodity for which there is interest, petitions for consideration of these crops/commodities should be sent directly to the Secretariat of the Joint Meeting and copies provided to the Chairman of the Codex Committee on Pesticide Residues.

4. Since the last meeting of the Group in 1975 there had been two meetings of the Joint Meeting (1975/1976) and the Group, therefore, reviewed Priority Lists 1 and 2 (ALINORM 76/24) noting that, with the exception of the following, all compounds had been fully evaluated by the JMPR in the light of all available information. Where full evaluation was not possible the reasons had been given:

methomy	- toxicology data not available - "guideline levels" recommended
ethephon	- scientific data not available before 1977
propargite (cyclosulfine)	- scientific data not available before 1977
formetanate	- a product of declining importance
phosmet	- toxicology data not available until 1977 - "guideline levels" recommended.

The Group reiterated its view that the evaluation of the above compounds, with the exception of formetanate, should be completed as soon as possible. It agreed that formetanate should be deleted from the Priority List.

5. The Group re-examined List III and agreed that, with the exception of tetrachlorvinphos, none of the compounds listed were known to give rise to significant residues in food commodities or to be causing public health concern. Tetrachlorvinphos is being used in increasing amounts on fruit and vegetable crops and poultry and adequate data are expected to be available in 1978 or 1979. Other compounds on this list were judged in 1975 to meet some of the criteria but not to warrant high priority. The Group decided that, unless concern was expressed by any delegation during the present session, the following compounds would be deleted from the Priority List III:

chlorthal-dimethyl
chlorthiamid
dalapon
dicamba
dicrotophos
dinobuton
dinoseb
dithianon
drazoxolon
pentachlorophenol
picloram
propanil
propyzamide

6. The Group received submissions from Australia (aminocarb, phorate), Germany (ethiofencarb), the U.S. (imazalil, thiofanax), Netherlands (imazalil), New Zealand (benzoximate, bupirimate, fenbutatin oxide, glycophene, triforine and vinclozolin) and Italy (phenthoate, prothoate and drepamon). It was agreed that the following compounds fulfilled the criteria for inclusion in Priority List IV:

aminocarb:	4-dimethylamino-3-methylphenyl-methylcarbamate (MATACIL)/Bayer
benzoximate:	ethyl O-benzyl 3-chloro-2,6-dimethoxybenzohydroximate (CITRAZON/ Nippon Soda)
bupirimate:	5-butyl-2-ethylamino-6-methyl-pirimidine-4-yl-dimethyl-sulfamate (NIMROD/ICI)
ethiofencarb:	(2-ethylthiomethyl-phenyl)-N-methylcarbamate (CRONETON/Bayer)
fenbutatin:	hexakis beta, beta,-dimethylphenethyldistannoxane (TORQUE/Shell)
glycophene:	1-isopropylcarbamoyl-3-(3,5-dichlorophenyl)dydantoine (ROVRAL/ Rhone-Poulenc)
imazalil:	1-[2-(2,4-dichlorophenyl)-2-(2-propenyl-oxy)-ethyl]-1 H-imidazole (Janssen Pharmaceutica)
phorate:	diethyl 3-(ethylthiomethyl)phosphoro-thiothioate (THIMET/Cyanamid)
thiofanox:	3,3 dimethyl-1-(methylthio)-2-butanone O-[(methylamino)-carbonyl] oxime (DACAMOX/Diamond Shamrock)
triforine:	N,N-bis(1-formamido-2,2,2-trichloroethyl)piperazine (SAPROL/ Cela-Merck)
vinclozolin:	3-(3,5-dichlorophenyl)-5-methyl-5-vinyl-1,3-oxazolidine-2,4-dion (RONILAN/B.A.S.F.)

7. Manufacturers and governments interested in the above compounds were to be asked to advise Dr. E.E. Turtle, FAO Plant Protection Service, Rome, of the nature and extent of scientific information available on each compound and to indicate when the complete information required for evaluation of suitable maximum residue limits could be provided to FAO and WHO.

8. Further information is sought on the following compounds:

phentoate
prothoate
drepamon

9. The Group also received and commented upon a tentative list of items for consideration at the 1977 Joint FAO/WHO Meeting of Experts on Pesticide Residues compiled by the secretariat of the Joint Meeting, as follows:

1. Pesticides postponed from 1976 or earlier sessions of the JMPR:

carbendazim
daminozide
ethephon
propargite (Cyclosulfine)
phosmet

2. Pesticides for which ADIs or maximum residue limits are temporary and which have previously been listed for review in 1977. With most of these the additional data needed for re-evaluations have been indicated in the respective monographs:

bromophos
chinomethionat
chlorothalonil
chlorobenzilate
cyhexatin
dichlofluanid
2,6-dichloro-4-nitroaniline (Dicloran)
dithiocarbamates
fenamiphos
lindane
maleic hydrazide (1976 listed requirement)
methomyl (1976 listed requirement)

3. Items referred from the Codex Committee on Pesticide Residues for clarification or further evaluation.

4. The following compounds from Priority List IV:

fenbutatin oxide
phorate
imazalil
ethiofencarb
triforine
glycophene

Consideration of these compounds in 1977 will be strictly conditional on receipt by the secretaries of full submissions of information not later than 30 July 1977.

NOTE: Tentatively, the remaining compounds in List IV, will become candidates for inclusion in the 1978 or subsequent evaluation list.

APPENDIX V

REPORT OF THE AD HOC WORKING GROUP ON METHODS OF ANALYSIS

The following persons took part in the discussions of the ad hoc Working Group on Methods of Analysis:

P.A. Greve	- The Netherlands (Chairman)
D.C. Abbott	- United Kingdom
A. Ambrus	- Hungary
J.A.R. Bates	- United Kingdom
G. Becker	- Federal Republic of Germany
H.W. Brinkman	- The Netherlands
W.P. Cochrane	- Canada
W. Dejonckheere	- Belgium
J.F. Eades	- Ireland
E.D. Magallona	- Philippines
R. Mestres	- France
T. Stijve	- Switzerland
G.M. Telling	- United Kingdom
R.H. Thompson	- United Kingdom
R. Vaz	- Sweden
K. Voldum-Clausen	- Denmark
J. Wessel	- United States of America
H. Frehse	- International Union of Pure and Applied Chemistry (IUPAC)

1. Introduction

The Working Group discussed the following points:

- up-dating and re-assessment of the recommendations for methods of analysis given in the Report of the 8th session of the CCPR (ALINORM 76/24, App.IV, para 2.2) in the light of comments received from governments and international organizations;
- systems for the numerical expression of maximum residue limits (ALINORM 76/24, para 11);
- expression of maximum residue limits for fat-soluble pesticides (ALINORM 76/24, para 186 and App. IV, para 3.4);
- elaboration of the concept of "good practice in the analysis of pesticide residues" (ALINORM 76/24, App. IV, para 1).

2. Recommendations for Methods of Analysis

2.1 General Remarks

The Working Group examined the comments received from Member countries and IUPAC and considered again the criteria for the selection of reliable analytical methods. It reaffirmed its view expressed in the previous reports that particular emphasis should be given to multi-residue methods, gas-liquid chromatographic methods and to methods which had been subjected to collaborative studies. The undertaking and subsequent publication of collaborative studies would, therefore, be extremely helpful in the selection of methods suitable for Codex purposes. When collaborative studies were lacking, published methods which were known to have been validated by more than one laboratory were chosen.

For convenience, the collaboratively studied methods and validated methods are listed separately. Suitable confirmatory methods are not available for all pesticides, but where the Working Group could make recommendations, these are also listed separately.

The Working Group considered in more detail than hitherto the extent to which the methods cited were applicable to the relevant commodities at Step 9 of the Codex Procedure. It again emphasized that the cited methods have not necessarily been checked for use on all commodities. Methods developed especially for fatty foodstuffs are indicated by "A", while methods applicable to non-fatty foodstuffs are indicated by "B".

Due to lack of information, several pesticide/commodity combinations at Step 9 were not considered by the Working Group at this session. These were chlordimeform, fentin, paraquat and cyhexatin.

The Working Group noted that some expressions of maximum residue limits given in the headings of the individual paragraphs of Appendix II of ALINORM 76/24 should be re-worded so as to describe better the actual analytical practice. These cases have been summarized in Note 1 to the list of references. The Working Group also noted that some metabolites or impurities included in the headings were rarely found in most commodities moving in international trade. These have been summarized in Note 2 to the list of references.

2.2 List of References to Suitable Methods of Analysis

This list supersedes previous lists.

Compound		Methods *		
Codex No.	Name	Collaboratively studied	Other	Confirmatory
1	aldrin/dieldrin (Note 1)	A: 1a,2a,3,4a B: 1a,2b,3,4b	A: 10,11,48 B: 12,13,14	
3	binapacryl	B: -	B: 4c, 15	B: 15
6	captafol	B: -	B: 9,14,16	
7	captan	B: 3,4b	B: 9,14,16,17	
8	carbaryl	A: 1b B: 1b,1c	A: - B: 18,19	
12	chlordane (Note 2)	see aldrin/dieldrin for quantitation see	see aldrin/dieldrin method 20	A: 25 B: 25
14	chlorfenvinphos	A: 4a B: 1d, 2e,4b	A: - B: 21	
16	chlorobenzilate	B: -	B: 9	
18	coumaphos (Note 2)	A: 3	A: 22	
19	crufomate	A: -	A: 9,23,24	A: 24
21	DDT (Note 1)	see aldrin/dieldrin	see aldrin/dieldrin	A: 25 B: 25
22	diazinon	A: 1a,2c,3 B: 1a,1d,2d,3,4b	A: 21,26 B: 14,21	A: - B: 27
25	dichlorvos	A: - B: 6	A: 21,28,29,30,31 B: 14,21,28,29,30	
27	dimethoate (Note 1)	A: - B: 1d,2f	A: 21,32 B: 14,21,32,33	
28	dioxathion (Note 1)	A: - B: 1d,2e,4b	A: 21 B: 21	
29	diphenyl	B: -	B: 34,35,36,37	

* A = Fatty foodstuffs, as e.g. foodstuffs of animal origin, vegetable oils and oil seeds.
B = Other foodstuffs.

Compound		Methods *		
Codex No.	Name	Collaboratively studied	Other	Confirmatory
31	diquat	A: - B: -	A: 38 B: 38	
32	endosulfan (Notes 1 and 2)	A: 1a,2a,3 B: 1a,2b,3,4b	A: - B: 13,14	A: - B: 56,57
33	endrin (Note 2)	see aldrin/dieldrin	see aldrin/dieldrin	A: 58,59 B: 58,59
34	ethion (Note 2)	A: 1a,3,4a B: 1a,1d,2e,3,4b	A: 21,39 B: 14,21	
35	ethoxyquin	B: 1e	B: 9,41	B: 40
36	fenchlorfos (Note 2)	A: 1a,1d,2e,3,4a	A: 14,21	
37	fenitrothion	A: - B: 3,4b	A: 21 B: 14	
41	folpet	B: 4b	B: 9,14,26	
43	heptachlor (Note 1)	see aldrin/dieldrin	see aldrin/dieldrin and A: 42	A: 25,58 B: 25,58
44	hexachlorobenzene	see aldrin/dieldrin and A: 7	see aldrin/dieldrin and A: 43	A: 43
45	hydrogen cyanide	B: 1f (Note 3)	B: 4d,44,9	
46	hydrogen phosphide	B: -	B: 45,46	
47	inorganic bromide	B: 8	B: 4e(Note 4),47	
48	lindane	see aldrin/dieldrin	see aldrin/dieldrin	A: 60 B: 60
49	malathion (Note 1)	A: 1a,2c,3 B: 1a,1d,2d,2e,3,4b,6	A: 21 B: 14,21	A: - B: 27
56	orthophenylphenol	B: -	B: 34,35,36,37	
58	parathion (Notes 1 and 2)	A: 1a,2c,3 B: 1a,1d,2d,2e,3,4b	A: 21 B: 14,21	A: - B: 27
59	parathion-methyl (Notes 1 and 2)	A: 1a,2c,3 B: 1a,1d,2d,2e,3,4b	A: 21 B: 14,21	A: - B: 27
61	phosphamidon (Note 1)	B: 3	B: 21,49	
62	piperonyl butoxide	A: 1g B: 1g	A: - B: 50	
63	pyrethrins (Note 5)	A: - B: -	A: 9 B: 9	
64	quintozene (Note 2)	A: 1a,2a B: 1a,2b,4b (Note 6)	A: - B: 14,51	
65	thiabendazole	B: -	B: 9,52,53,54,55	
66	trichlorfon	A: - B: -	A: 4f,21 B: 4f,21	

* A= Fatty foodstuffs, as e.g. foodstuffs of animal origin, vegetable oils and oil seeds
B= Other foodstuffs.

Note 1 - The Working Group suggests that the expression of Codex maximum residue limits be re-worded as follows:

ad 1 : sum of HHDN and HEOD
ad 21 : sum of p.p'-DDT, o.p'-DDT, p.p'-DDD(TDE) and p.p'-DDE
ad 27 : sum of dimethoate and omethoate
ad 28 : sum of cis and trans-dioxathion
ad 32 : sum of alpha- and beta-endosulfan and endosulfan sulphate
ad 43 : sum of heptachlor and heptachlor epoxide
ad 49 : sum of malathion and malaoxon
ad 58 : sum of parathion and paraoxon
ad 59 : sum of parathion-methyl and paraoxon-methyl
ad 61 : sum of cis and trans-phosphamidon and N-desethyl phosphamidon

Note 2 - The Working Group noted that the following metabolites or impurities are rarely found in commodities moving in international trade:

ad 12 : oxychlordane
ad 18 : oxygen analogue of coumaphos
ad 32 : endosulfan sulphate
ad 33 : delta-keto-endrin
ad 34 : oxygen analogues of ethion
ad 36 : oxygen analogue of fenchlorfos
ad 58 : paraoxon
ad 59 : paraoxon-methyl
ad 64 : pentachlorobenzene

Note 3 - This method is not considered suitable at the maximum residue limit level for flour.

Note 4 - This method is not valid above 100 ppm of inorganic bromide unless the extract is suitably diluted.

Note 5 - The Working Group noted that the expression of the residue under pyrethrins (Codex number 63, p. 67 of ALINORM 76/24) is not in accordance with current analytical practices.

Note 6 - The methods mentioned do not cover all metabolites of quintozene. The Working Group is of the opinion that more work has to be done with respect to the behaviour of the metabolites in the other multi-residue methods for organochlorine pesticides.

2.3 References

2.3.1 Collaboratively studied methods

(1) Official Methods of Analysis of the Association of Official Analytical Chemists, 12th ed. (1975) and subsequent changes in methods: JAOAC, 58, 397 (1975) and JAOAC, 59, 471 (1976)

a: 29.001 - 29.018
b: 29.077 - 29.081
c: 29.A01 - 29.A06
d: 29.033 - 29.037
e: 41.024 - 41.028
f: 26.115
g: 29.151

(2) US Food and Drug Administration, Pesticide Analytical Manual, Washington D.C. Contact Person: Mr. J. Wessel, Food and Drug Administration, 5600 Fishers Lane, Rockville, Md, 20852, USA

a: Vol. I, secs. 211.1 and 252
b: Vol. I, secs. 212.1 and 252
c: Vol. I, secs. 231.1 and 252
d: Vol. I, secs. 232.1 and 252
e: Vol. I, sec. 232

(3) Canadian Manual on Analytical Methods for Pesticide Residues in Foods, Information Canada, Ottawa, Canada, Cat. No. H 44-2869-REV (1973). Contact person: Mr. W.R. Ritcey, Food Research Laboratory, Health Protection Branch, Dept. of National Health and Welfare, Ottawa, Canada.

(4) Methodensammlung zur Rückstandsanalytik von Pflanzenschutzmitteln, 4. Lieferung (1976), Verlag Chemie GmbH, Weinheim/Bergstrasse, Federal Republic of Germany:

a: Methoden S 9 and 10
b: Methode S 8
c: Methode 8 A)
d: Methode 11)
e: Methode 149) not collaboratively studied
f: Methode 112)

(5) De Faubert Maunder, M.J. et al., Analyst, 89, 168 (1964)

(6) Panel on Dichlorvos and Malathion in Grain, Analyst, 98, 19 (1973)

(7) Bong, R.L., JAOAC, 58, 557 (1975)

(8) Panel on Fumigant Residues in Grain, Analyst, 101, 386 (1976)

2.3.2 Other methods

(9) Pesticide Analytical Manual, Vol. II (see under compound name)

(10) Greve, P.A. and Grevenstuk, W.B.F., Meded. Rijksfac. Landb. Gent.,40,115 (1975)

(11) Telling, G.M. et al., J. Chromatog. (accepted for publication)

(12) Holmes, D.C. and Wood, N.F., J. Chromatog., 67, 173 (1972)

(13) Sissons, D.J. et al., J. Chromatog., 33, 435 (1968)

(14) Mestres, R. et al., Ann.Fals.Exp.Chim., 67, 513 (1974) and 68, 81 (1975)

(15) Baker, P.B. and Hoodless, R.A., Analyst, 98, 172 (1973)

(16) Baker, P.B. and Flaherty, B., Analyst, 97, 713 (1972)

(17) Kilgore, W.W. et al., J. Agr. Fd. Chem., 15, 1035 (1967)

(18) Cohen, I.C. et al., J. Chromatog., 49, 215 (1970)

(19) Porter, M.L. et al., JAOAC, 52, 177 (1969)

(20) Cochrane, W.P. et al., JAOAC, 58, 1051 (1975)

(21) Abbott, D.C. et al., Pestic. Sci., 1, 10 (1970)

(22) Zakrevsky, J.G. and Mallet, V.N., JAOAC, 58, 554 (1975)

(23) Bowman, M.C. and Beroza, M., JAOAC, 50, 1228 (1967)

(24) Greenhalgh, R. et al., Bull.Env.Cont.Tox., 7, 237 (1972)

(25) Chau, A.S.Y. and Lanouette, M., JAOAC, 55, 1059 (1972)

(26) Machin, A.F. and Quick, M.P., Analyst, 94, 211 (1969)

(27) Singh, J. and Lapointe, M.R., JAOAC, 57, 1285 (1974)

(28) Dale, W.E. et al., J.Agr.Fd.Chem., 21, 858 (1973)

(29) Dräger, G., Pflanzenschutz-Nachr.Bayer, 21, 373 (1968)

(30) Elgar, K.E. et al., Analyst, 95, 875 (1970)

(31) La Hue, D.W., Environ.Entomol., 4, 11 (1975)

(32) Steller, W.A. and Pasarela, N.R., JAOAC, 55, 1280 (1972)

(33) Wagner, K. and Frehse, H., Pflanzenschutz-Nachr.Bayer, 29, 54 (1976)

(34) Mestres, R. et al., Trav.Soc.Pharm.Montpellier, 35, 87 (1975)

(35) Beernaert, H., J. Chromatog., 77, 331 (1973)

(36) Morries, P., J.Assoc.Publ.Analysts, 11, 44 (1973)

(37) Westöö, G. and Andersson, A., Analyst, 100, 173 (1975)

(38) Calderbank, A. and Yuen, S.H., Analyst, 91, 625 (1966)
(39) Ivey, M.C. and Mann, H.O., J.Agr.Fd.Chem., 23, 319 (1975)
(40) Weilenmann, H.R. et al., Lebensm.Wiss.u.Technol., 5, 106 (1972)
(41) Winell, B., Analyst, 101, 883 (1976)
(42) Porter, M.L. and Burke, J.A., JAOAC, 56, 733 (1973)
(43) Zimmerli, B. and Marek, B., Mitt.Geb.Lebensm.Unters.Hyg., 63, 273 (1972)
(44) Jaulmes, P. and Mestres, R., Ann.Technol.Agric., 11, 249 (1962)
(45) Robinson, W.H. and Hilton, W.H., J.Agr.Fd.Chem., 19, 875 (1971)
(46) Bruce, R.B. et al., J.Agr.Fd.Chem., 10, 18 (1962)
(47) Heuser, S.G. and Scudamore, K.A., Pestic.Sci., 1, 244 (1970)
(48) Mestres, R. et al., Trav.Soc.Pharm.Montpellier, 36, 43 (1976)
(49) Voss, G. et al., Residue Rev., 37, 120 (1971)
(50) Munday, W.H., JAOAC, 46, 244 (1963)
(51) Baker, P.B. and Flaherty, B., Analyst, 97, 378 (1972)
(52) Mestres, R. et al., Ann.Fals.Exp.Chim., 67, 585 (1974) and 69, 369 (1976)
(53) Rajzman, A., Analyst, 99, 120 (1974)
(54) Aharonson, N. and Ben-Aziz, A., JAOAC, 56, 1330 (1973)
(55) Tanaka, A. and Fukimoto, Y., J. Chromatog., 117, 149 (1976)
(56) Chau, A.S.Y., JAOAC, 55, 1232 (1972)
(57) Greve, P.A. and Wit, S.L., J.Agr.Fd.Chem., 19, 372 (1971)
(58) Chau, A.S.Y., Bull.Envir.Cont.Tox., 8, 169 (1972)
(59) Chau, A.S.Y., JAOAC, 57, 586 (1974)
(60) Cochrane, W.P. and Maybury, R.B., JAOAC, 56, 1324 (1973)

3. Systems for the expression of maximum residue limits

The Working Group examined the comments of Member countries on the relevant paragraph in the report of the 8th session of the Codex Committee on Pesticide Residues (ALINORM 76/24, para 11) and fully endorsed the view that limits below 10 mg/kg should be expressed to only one significant digit. It also came to the conclusion that, if they were strictly applied, neither the "geometrical progression" (e.g. 0.1, 0.2, 0.5, 1, 2, 5, 10 mg/kg) nor the "arithmetical progression" (e.g. 0.2, 0.3, 0.4 or 3, 5, 7, 10 mg/kg) formed the sole preferred basis for expressing maximum residue limits. However, the views expressed in the report of the 1973 JMPR (p. 12, para 2.5) were endorsed by the Working Group and considered to provide the best and most practical compromise solution. Thus, as a basic progression, the maximum residue limits should be chosen from 0.01, 0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 15, 20, 25 mg/kg as far as possible, wherever permitted by the data. Application of this principally geometric progression would not exclude occasional use of such maximum residue limits as 3 and either 7 or 8 (but not both) mg/kg; however, such digits should not be used for maximum residue limits below 1 mg/kg (e.g. not 0.3 or 0.07 mg/kg). The number of present maximum residue limits below 1 mg/kg lying outside the basic progression proved to be relatively small, viz.(maximum residue limit, pesticide involved and paragraph in ALINORM 76/24, App. II given):

0.03 mg/kg: quintozene, para 64.7
0.15 mg/kg: aldrin/dieldrin, para 1.5, 1.6
heptachlor, para 43.3, 43.4
0.3 mg/kg : binapacryl, para 3.6, 3.7
chlordane, para 12.15 - 12.21
dimethoate, para 27.5
0.4 mg/kg: azinphos-ethyl, para 2.6
chlorfenvinphos, paras 14.1, 14.2
phosphamidon, para 61.4
thiabendazole, para 65.3
0.7 mg/kg: diazinon, paras 22.2, 22.3, 22.5, 22.8, 22.20
lindane, para 48.4
parathion, para 58.1

4. Expression of maximum residue limits for fat-soluble pesticides

The Working Group gave further consideration to the problem of expression of maximum residue limits for pesticides for which 95% or more of the residues occur in the fatty portion of foods of animal origin. The following summarizes the results of its deliberations:

Whole milk

Most comments received from Member countries and the majority of the Working Group members indicated preference that maximum residue limits for whole milk be expressed on a "whole milk basis" for the reasons stated previously (ALINORM 76/24, Appendix IV, para 3.4). The Working Group noted that the limits originally recommended by the Joint Meeting for fat-soluble pesticide residues in milk were expressed on a whole milk basis. However, from 1969 onwards, these limits were converted, using an estimated 4% fat content in whole milk, in order to express maximum residue limits as on a "fat basis". The Working Group recommends that all existing maximum residue limits be converted back to a "whole milk basis" with appropriate rounding off to one significant digit.

Milk products, meat, poultry

The Working Group recognized that the wide range of fat content of cheeses and other milk products, made it necessary for the Joint Meeting to recommend limits for fat-soluble pesticides in milk products to be on a fat basis. It also recognized that data available to the Joint Meeting relevant to fat-soluble pesticides in meat and poultry were determined in the fat of such products. There was insufficient information to extrapolate accurately these data to a whole product basis. For these pragmatic reasons, it was the consensus of the Working Group that the expression of maximum residue limits for milk products and carcase meat as adopted at the 8th session of the Codex Committee on Pesticide Residues be maintained. It also endorsed the approach that the terminology for meat be used also for poultry. Therefore, the following general rules of expressing maximum residue limits for fat-soluble pesticides would be:

milk products - on a fat basis
carcase meat - in the carcase fat
carcase poultry - in the carcase fat

Low-fat products

The Working Group recommended that serious thought should be given to the problem of expressing maximum residue limits on a fat basis where the percentage level of fat in the commodity is low. Thus, when commodities contain in the region of only 1-2% of fat the analytical errors in the determination of fat content are proportionately much greater than those observed with materials of higher fat contents. In order to try to avoid the problems thus engendered the Working Group recommends that the Joint FAO/WHO Committee of Government Experts on the Code of Principles concerning Milk and Milk Products and the Codex Committee on Meat Products should be asked to advise on the possibility of establishing a minimum fat content below which maximum residue limits should be expressed on a whole sample basis. Such considerations would be applicable to the range of products considered by the Joint Meeting and the Codex Committee on Pesticide Residues.

Meanwhile the Working Group seeks the comments of Member countries on the following suggested scheme:

Commodity	basis for maximum residue limit	maximum residue limit
milk	whole milk	p
low fat milk products (below x% fat)	whole product	p
other milk products (above x% fat)	fat basis	$\frac{100}{x} \times p$
carcase meat and poultry	fat of carcase	q
meat, poultry and their products (above y% fat content)	fat basis	q
meat, poultry and their products (below y% fat content)	whole product	$\frac{y}{100} \times q$

Eggs

The Working Group agreed that there is no need to change the present practice of expressing maximum residue limits for eggs on a "shell-free basis".

5. Good practice in the analysis of pesticide residues

The Working Group again discussed the "Good Practice in the Analysis of Pesticide Residues" (cf. ALINORM 76/24, Appendix IV, para 1). It identified many points which will be covered in a discussion paper for the next session of the Codex Committee on Pesticide Residues. Special attention will also be given to confirmatory techniques.

APPENDIX VI

STATEMENT BY THE PESTICIDE TERMINAL RESIDUE COMMISSION; APPLIED CHEMISTRY DIVISION; INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY (IUPAC)

Ethylenethiourea

A Special Report on the Occurrence of Ethylenethiourea as a Terminal Residue Resulting from Agricultural Use of Ethylenebisdithiocarbamate Fungicides.

September 1976

Conclusions

1. ETU occurs as a primary reaction product of the EBDC fungicides.
2. ETU is present in commercial formulations in varying amounts (0.02-2%). The amount increases on storage under warm and humid conditions.
3. Environmental degradation (metabolism in plants, soils, animals and water) of the EBDC fungicides also leads to ETU formation.
4. There is no evidence for the persistence or bioaccumulation of ETU residues in plants, soils or water, although ETU is detected as a metabolite and accumulates in the thyroids of animals.
5. Currently, there are several adequate methods for the determination of ETU residues; however, there are no simple procedures that are universally applicable.
6. Monitoring data confirm the frequent presence of EBDC residues in or on raw agricultural crops treated using good agricultural practices. Generally, residues of EBDC do not exceed nationally recommended tolerances 1-7 ppm.
7. A substantial portion of the EBDC residue may be removed from the raw agricultural crop following a simple washing procedure. These procedures remove approximately from 30-90% of the residue.
8. Monitoring data confirmed the presence of ETU residues in or on certain raw agricultural crops. Generally, these residues were less than 0.1 ppm, most approaching the lower limits of analytical detection (0.01 ppm).
9. ETU is found in most heat processed foods, where EBDC residues were found prior to processing. Heat processing has been shown to convert from 16 to 23% (weight basis) of the EBDC residues to ETU. Consequently, the concentration of ETU may be higher in processed foods than in the raw agricultural products.
10. Current chemical data do not preclude the continued use of EBDC fungicides in good agricultural practices.

Recommendations

1. The acceptable average daily intake of ETU and EBDC should be calculated immediately.
2. Analytical methodology for ETU and ETU-forming compounds should be simplified to expedite monitoring programmes. Simple, rapid and specific methods are required. An international collaboration study should be initiated.
3. Toxicological significance of residues reported in monitoring data should be determined by competent international bodies.
4. Further studies of the degradation and metabolism of EBDC and ETU in crops and animals should be conducted.
5. Further data on the conversion of EBDC residues to ETU in various food processing procedures should be developed. Studies to minimize the formation of ETU during food processing should be initiated.

APPENDIX VII

GUIDELINES FOR GOOD AGRICULTURAL PRACTICE IN THE USE OF PESTICIDES

Introduction

Already in an early stage of the work of the Codex Committee on Pesticide Residues the question was raised as to whether or not the problems of establishing maximum residue limits could be divorced from the related problems connected with use patterm and pest control practice. During the discussions of the ad hoc Drafting Group on Principles of Establishing and Enforcing Tolerances, which met in Ottawa, June 1969, this matter was considered again on the basis of the extended scope of the Codex Alimentarius, as laid down in the present Procedural Manual of the Codex Alimentarius Commission, which includes "provisions of an advisory nature in the form of Codes of Practice, guidelines and other recommended measures". From the Ottawa recommendations, the following may be quoted:

> "The Group considered the possibility of developing Codes of Practice for the use pattern for pesticides and, recognizing the need but also the magnitude of the task, recommended at this stage that only preliminary steps could be taken, possibly by having the Codex Committee on Pesticide Residues develop general guidelines for the content of such Codes of Practice,.....".

At the request of the Codex Committee on Pesticide Residues, the Netherlands delegation has prepared a working paper, in which contributions from several other delegations have been incorporated.

The main purpose of this working paper is to indicate guidelines on pesticides usage on a general basis and to encourage the use of more effective and/or less persistent pesticides so as to reduce the amount of residues in food of plant or animal origin, in animal feed, and in the environment. These guidelines are intended for use by administrators, specialists and advisory agencies. No attempt will be made to elaborate on use recommendations for individual pesticides and their formulations. It should be emphasized that due to differences in pests, pest populations, commodities, climate and geographical location, it is not possible to propose universal recommendations for the use of specific pesticides against specific pests. It should also be remembered that not all countries have uniform capabilities for the development and implementation of detailed guidelines for the use of pesticides. Therefore, only general guideline practices can be suggested for the use of pesticides, and the details of use will require development of information within the Member countries. The important issue is, however, to try and eliminate disturbing side- effects of certain pesticides or certain applications.

A first basis for general guidelines is provided by the definition of the concept of "good agricultural practice", which was proposed by the ad hoc Working Group during its meeting in Copenhagen, October 1971, adopted by the Codex Committee on Pesticide Residues at its 6th session, and subsequently included in the report of the 1975 Joint Meeting (WHO Technical Report Series No. 592). The following definition was agreed upon:

> "Good agricultural practice in the use of pesticides is the officially recommended or authorized usage of pesticides under practical conditions at any stage of production, storage, transport, distribution and processing of food and other agricultural commodities, bearing in mind the variations in requirements within and between regions and taking into account the minimum quantities necessary to achieve adequate control, the pesticides being applied in such a manner as to leave residues that are the smallest amounts practicable and that are toxicologically acceptable". (*)

A second basis for general guidelines can be derived from the following recommendations of the 1968 Joint Meeting to Member governments (WHO Technical Report Series No. 417):

> "1. Noting that the occurrence of unintentional residues in a number of food items and animal feedstuffs is partly a result of environmental contamination, the Meeting recommends that efforts be made to discover the sources of such contamination and, where possible, to eliminate them, in order to reduce the background level of pesticide residues.
>
> 2. In view of the concern over the extent of the use of certain persistent pesticides, the Meeting recommends that they be replaced, wherever possible, by pesticides, the residues of which are less undesirable toxicologically".

The emphasis in these recommendations is clearly on the desirability of making a conscious effort to replace certain pesticides by alternative chemicals, which are preferable from the food or environmental hygiene point of view. The importance of reducing residues in animal feed has again been emphasized by a recommendation of the 1969 Joint Meeting (WHO Technical Report Series No. 458):

> "Because some compounds currently in use as seed protectants are highly toxic to man, and their uses can result in the occurrence of unintentional residues, the need to develop safer substitutes was emphasized. In the meantime, every effort should be made to reduce the contamination of commercial grain and animal feeds to the minimum and to undertake surveys to ensure that directions are being observed by farmers and others concerned with the handling of treated seeds".

Further discussions during the 1972 Joint Meeting have indicated the desirability of recommending limits for pesticide residues in animal feed (WHO Technical Report Series No. 525):

> "In recognition of the fact that residues in animal products can result from residues in feed and that such animal feeds enter into commerce, the Meeting felt it would be appropriate to consider data and to make recommendations on residues in such animal feeds".

It must be recognized that the policy with respect to pesticides regulations or control measures has in many countries followed trends similar to those indicated in the FAO/WHO recommendations. As a consequence, restrictions in the use of certain pesticides have been implemented. It would, therefore, seem useful to translate the principles of the recommendations into terms of general guidelines referring to the particular aspects of pesticides usage.

(*) It is understood that "officially recommended or authorized usage" implies that, apart from the usual criteria (efficacy, toxicology and food quality in relation to public health), aspects concerning the effect of pesticides usage on the environment at large have been considered as well.

Pesticide Situation

Before attempting to construe general guidelines from existing principles, such as are laid down in the definition of good agricultural practice, and in the various recommendations from the FAO/WHO Joint Meeting on Pesticide Residues, it may be useful to consider briefly the present pesticide situation as background against which further considerations should be judged. Without being exhaustive, the following summary could serve such purpose:

1. The use of pesticides for agricultural, veterinary, public health, domestic and industrial purposes has:

(a) ensured a better protection of harvest against unpredictable losses caused by plant diseases and pests;
(b) improved both the quantity and quality of food;
(c) decreased the extent of vector-borne and other diseases in man and animals.

2. For the foreseeable future agricultural pesticides will continue to be required in the production, transportation and storage of food, feed and fibre. However, most pesticides are derived from, or produced through the use of non-renewable world resources. Wastage in their use should be avoided as part of an overall global effort to conserve these resources and maximize their effectiveness.

3. Apart from occupational accidents and gross misuse, the regular use of pesticides has resulted in a number of undesirable side-effects, partly attributable to occasional indiscriminate applications, partly due to unforeseen biological effects.

4. This situation has prompted developments which can be briefly described as follows:

(a) research on alternative methods of pest control, and introduction of these wherever technically possible and economically feasible;
(b) introduction of alternative pesticides with greater safety and suitability;
(c) more adequate legislation or other administrative provisions, coupled with better extension and education facilities in the field of pesticides usage.

5. At present alternative methods of pest control are not available to the extent that they can be applied on a broad scale as full replacement of pesticides, but they offer possibilities in specific cases, either alone or in combination with selected or selective pesticides.

6. Research or alternative methods of pest control to be applied in combination with selected or selective pesticides (i.e. integrated pest control) should, therefore, be intensified, and in the meantime emphasis should be placed on a system of supervised control, which aims at a judicious use of pesticides coupled with assessment of economic threshold levels and forecasting systems.

7. Pesticides legislation or other effective control systems should be introduced and implemented in those countries where they have not yet been established; in other countries with existing legislation or administrative controls, these may need to be intensified in order to strike a better balance of benefits to agriculture against risks to man, environment and food.

8. The extent to which regulations are introduced should, on the other hand, not go beyond reasonable and acceptable limits, in order to ensure that plant health and other pest control requirements as well as availability of adequate pesticides are not jeopardized. Regulations should be accompanied by enlightening and meaningful educational programmes in pesticides use and safety.

9. Pesticides legislation mainly deals with two fundamental aspects, which are distinctly different though interrelated, viz.:

(a) use pattern and handling regulations, pertaining to registration and approval on the basis of criteria for efficacy and for side-effects;
(b) residue regulations, pertaining to the establishment of maximum limits of pesticide residues in food and feed on the basis of good agricultural practice.

10. Pesticide residues occur in agricultural commodities as a result of (a) intentional use of pesticides for protection of growing crops or stored products; (b) unintentional exposure to pesticides such as would occur in crops grown in soil treated previously or contaminated by foliar treatments of other crops grown earlier in the rotation; (c) unintentional accumulation of food in animals from the ingestion of feeds containing pesticide residues; and (d) contamination of crops or animals exposed to chemicals in the environment.

11. It has to be recognized that differences exist both between and within countries as to pest incidence, pest control conditions, and types of crops, which may be reflected in the different pesticide use patterns, pesticide demands and requirements regarding maximum residue limits.

12. The prime target of the Codex Committee on Pesticide Residues is to reach agreement on international maximum limits for pesticide residues in food, in order to avoid trade barriers and to secure good agricultural practice under widely varying conditions.

13. As maximum residue limits, use pattern and good agricultural practice are interrelated, the Codex Committee on Pesticide Residues has also undertaken to formulate guidelines for the use of pesticides.

Guidelines

These guidelines indicate principles for the use of pesticides in agriculture, and in the harvesting, marketing, transport and storage of foodstuffs. Taking into account the attainment of the desired degree of control of pests at an economic cost and with a minimum of danger to operators, agricultural workers, consumers, beneficial animals and the environment, the following represents a list of goals which should be aimed at in good practice in the use of pesticides for the above mentioned purposes. It should be understood that the information presented in the guidelines is not intended as a substitute for actual supervised trials under the growing conditions of the area involved.

General

1. If pesticides reach man or animals through different routes and thus give rise to additional body loads, the use patterns may have to be adjusted, and if necessary, priority should be given to those uses which are indispensable and for which no adequate alternatives are available.

2. Maximum residue limits established for products for human consumption are not necessarily acceptable for the same product when this is destined for animal consumption, and in such cases this should be indicated.

3. In view of the necessity of preserving a balance between cost, productivity, quality and freedom from residues, the concept of good agricultural practice in the realm of pesticide residues embraces all interrelated and essential factors and functions which ensure that the pests will be controlled effectively, leaving residues that are the smallest amounts practicable and that are toxicologically acceptable.

4. Therefore, pest control treatments should only be made when necessary. The requirements for pest control should first be established, followed by the application of the preferred method of control.

Choice of pesticide

5. All pesticides which are used should be authorized (registered) by appropriate authorities in the country of use. They should only be marketed with labels indicating recommended or approved uses, times, methods and rates of application, and safety precautions for the user. Such recommended methods of application should be based on supervised trials and other experimental work, and should take into account such variations in climate, in crop husbandry, and in incidence of pests as may occur under practical conditions from time to time in the various places in which the pesticide may be used (see ALINORM 72/24A, para 10, and WHO Technical Report Series No. 592, page 40, Explanatory note on good agricultural practice).

6. Bearing in mind the actual conditions under which the pesticide will be used, the pesticide should be adequately safe to man and the environment, and at the same time provide adequate pest control.

7. Where a choice of pesticides is possible, the cost and effectiveness of available pesticides should be weighed against the risks involved, and those which show a more favourable benefit-risk ratio for the particular purpose in question should be preferred.

8. When pest control is required in the early growing stage of the crop, a pesticide may be needed which has an adequate and acceptable degree of persistence, in order to avoid repeated applications of non-persistent pesticides.

9. Where plant quarantine and/or phytosanitary requirements make it necessary to apply pesticides close to harvest, those which have a short persistence should be preferred (see also 23 and 24).

10. The agricultural use of persistent and/or cumulative pesticides on crops for human consumption should be restricted as much as possible, and be limited to the control of pests, weeds and diseases for which at present no suitable alternative chemicals are available.

11. As a general rule, persistent and/or cumulative pesticides should not be used on fodder crops and not be applied directly to animals for veterinary purposes.

12. Where post-harvest treatments are required, pesticides which leave residues that are the smallest amounts practicable and that are toxicologically acceptable, do not interact with the food commodity, and/or are readily removed during storage, preparation or cooking, should be preferred.

13. With respect to post-harvest treatment of stored products (e.g. cereal grains) it is recommended not to use persistent and cumulative pesticides as direct admixture.

14. The application of adequately durable pesticides to the exterior of packing material for stored products is acceptable, but the use of highly persistent and cumulative pesticides should be avoided as much as possible.

Choice of formulation

15. Formulations which combine maximum efficiency of the pesticide with minimum risk should be preferred.

16. Supplementary adjuvants should be used only if their effect is known and where their use produces a significant improvement in performance.

17. In general, the use of combined pesticide/fertilizer formulations should be avoided. However, such practices are recommended by local authorities when they are considered beneficial.

Dosage

18. The quantity of pesticide applied should not be greater than the minimum required to achieve the desired degree of control.

19. The number of treatments should be determined by the desired degree of control and by the severity of pest conditions.

Application

20. The method of application should be selected to ensure optimum pest control with the minimum contamination of the crop and the environment.

21. Indirect treatment (such as soil application, seed dressing, treatment of alternate hosts) can in some cases be used to supplement or replace direct application to food crops.

22. Application equipment should at all times be maintained and used according to the makers' instructions.

Timing of treatment

23. Treatment should preferably be carried out when the pests are at the most vulnerable stage of development, and when climatic conditions and cultural practices will ensure that the optimum effect can be attained from the treatment. In some instances, however, action may be necessary immediately following detection of the pest species.

24. The interval between last application and harvest (slaughter in the case of veterinary use) should be as long as possible in order to permit the greatest reduction in pesticide residues, bearing in mind the pest incidence, the degree of control required for a maximum utilization of the commodity, and the vulnerability of the treated crop immediately pre-harvest. To this end official pre-harvest intervals should be established and adhered to.

Post-treatment practice

25. Crop rotation should be adjusted in such a manner that unintentional residues in the edible parts of the crop, as a result of previous treatments, will be minimal, particularly if the crop may be used as animal feed, and accumulation in the animal body may lead to undue residues in food products of animal origin.

26. Seed-grain, treated with pesticides at dosages to provide long-term protection in the soil, must, under no circumstances, be mixed with commodities destined for human or animal consumption. Sufficient safeguards ought to be provided which would minimize the accident risk of such practices.

27. Where grain intended for consumption must be protected in storage, only compounds with low toxicity and/or short persistence should be used.

28. In storage practice the selection of the pesticide for treatment of empty warehouses or ship holds, and the subsequent storage arrangements should be such that there is a minimum risk of contaminating feed or food products.

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