

ONCHOCERCIASIS CONTROL PROGRAMME IN WEST AFRICA
PROGRAMME DE LUTTE CONTRE L'ONCHOCERCOSE
EN AFRIQUE DE L'OUEST

EXPERT ADVISORY COMMITTEE

Report of the fourteenth session
Ouagadougou, 7 - 11 June 1993

CONTENTS

	<u>Page</u>
List of Participants	2
Executive Summary and Recommendations	4
1. Opening of the session	7
2. Adoption of the agenda	7
3. Follow-up of EAC.13 recommendations	8
4. Matters arising from the thirteenth session of the JPC	9
5. Administrative and financial briefing	9
6. Reports of field visits by EAC members	11
7. Review of vector control including report of the fourteenth session of the Ecological Group	12
8. Review of epidemiological activities and disease control with ivermectin	15
9. Review of devolution activities	20
10. Review of the Macrofil Chemotherapy Project (formerly Onchocerciasis Chemotherapy Project)	24
11. Review of biostatistics and information systems activities	25
12. Identification of research priorities	26
13. Other matters	28
14. Date and place of EAC.15	28
15. Adoption of the draft report	28
16. Closure of the session	28
 Annex 1: Report of the fourteenth session of the Ecological Group	
Annex 2: Analysis of health systems structure	
Annex 3: Joint OCP-TDR research activities	

LIST OF PARTICIPANTS

Members

Dr Y. Aboagye-Atta, Resident Medical Officer, Department of Health and Nuclear Medicine, Ghana Atomic Energy Commission, P.O. Box 80, Legon, Accra, Ghana

Professor (Mrs) Adenike Abiose, Medical Director, The National Eye Centre, Off Express Bypass, P.M.B. 2267, Kaduna, Nigeria

Professor D. Calamari, Istituto di Entomologia Agraria, Università degli Studi di Milano, Via Celoria 2, I-20133 Milano, Italy

Professor A. Degrémont, Director, Institut Tropical Suisse, Socinstrasse 57, B.P. CH-4002 Basel, Switzerland

Dr A.D. Franklin, 14 Impasse de la Cave, 77100 Meaux, France

Dr J. Grunewald, Institut für Tropenmedizin, Wilhelmstrasse 27, D-7400 Tübingen, Germany

Professor D.H. Molyneux, Director, Liverpool School of Tropical Medicine, Pembroke Place, Liverpool, L3 5QA, United Kingdom (Chairman)

Professor G. Webbe, London School of Hygiene and Tropical Medicine, (University of London), Keppel Street, London WC1E 7HT, United Kingdom

World Health Organization

Dr E.M. Samba, Director, Onchocerciasis Control Programme, Ouagadougou.

Dr H. Agoua, Devolution Unit, Onchocerciasis Control Programme, Ouagadougou

Dr L.K.B. Akpoboua, Vector Control Unit, Onchocerciasis Control Programme, Bamako

Dr C. Back, Vector Control Unit, Onchocerciasis Control Programme, Bouaké

Dr B.A. Boatin, Chief, Epidemiological Unit, Onchocerciasis Control Programme, Ouagadougou

Dr O.W. Christensen, Consultant, Onchocerciasis Control Programme, WHO/HQ, Geneva

Dr C.D. Ginger, Manager, Macrofil Chemotherapy Project, Onchocerciasis Control Programme, WHO/HQ, Geneva

Dr J.M. Hougard, Vector Control Unit, Onchocerciasis Control Programme, Bamako

Dr A. Maïga, Team Leader, Inter-agency (WHO/UNICEF) Dracunculosis Eradication Programme in Africa, Ouagadougou

Dr I. Niambélé, Epidemiological Unit, Onchocerciasis Control Programme, Bamako

Dr K. Nimaga, Epidemiological Unit, Onchocerciasis Control Programme, Ouagadougou

Dr D. Quillévéré, Chief, Vector Control Unit, Onchocerciasis Control Programme, Ouagadougou

Miss M.L. Ravelonanosy, Programme Officer, Director's Office, Onchocerciasis Control Programme, Ouagadougou

Dr J.H.F. Remme, Special Programme for Research and Training in Tropical Diseases, WHO/HQ, Geneva

Dr A. Sékétéli, Chief, Devolution Unit, Onchocerciasis Control Programme, Ouagadougou

Mr E.J. Senghor, Devolution Unit, Onchocerciasis Control Programme, Ouagadougou

Dr E. Soumbey-Alley, Chief, Biostatistics and Information Systems Unit, Onchocerciasis Control Programme, Ouagadougou

Dr A.W. Tiemtoré, Intercountry Devolution Coordinator, WHO/AFRO, Ouagadougou

Mr J.M. Trudel, Chief, Administration and Management, Onchocerciasis Control Programme, Ouagadougou

Dr F. Wurapa, Regional Adviser, Parasitic Diseases, WHO/AFRO, Brazzaville

Mr L. Yaméogo, Vector Control Unit, Onchocerciasis Control Programme, Ouagadougou

Mr D.G. Zerbo, Vector Control Unit, Onchocerciasis Control Programme, Kara

World Bank

Mr Bruce Benton, Onchocerciasis Coordinator, World Bank, Washington, D.C., U.S.A.

Dr Y. Genevier, World Bank, Washington, D.C., U.S.A.

Other participants

Dr P. Brika, National Oncho Coordinator, Bouaké, Côte d'Ivoire

Dr Y. Kassé, National Oncho Coordinator, Kankan, Guinea

Dr M. Traoré, National Oncho Coordinator, Oncho National Team, Epidemiological Division, Bamako

Observer

Dr M. Pacqué, Sight Savers, c/o IOTA, B.P. 28 Bamako

EXECUTIVE SUMMARY AND RECOMMENDATIONS

1. The fourteenth session of the Expert Advisory Committee (EAC) was held in Ouagadougou at the headquarters of the Onchocerciasis Control Programme in West Africa (OCP) from 7 to 11 June 1993 under the chairmanship of Professor David Molyneux. Informal briefing was provided to EAC members on Saturday 5 June.
2. In opening the session, the Chairman welcomed the new members of the Committee, Prof. (Mrs) Adenike Abiose, Prof. A. Degrémont, Dr J. Grunewald and Prof. G. Webbe as well as Dr F. Wurapa of WHO/AFRO, Mr Bruce Benton and Dr Y. Genevier of the World Bank, the National Oncho Coordinators from Côte d'Ivoire, Guinea and Mali, and Dr M. Pacqué of "Sight Savers".
3. The Chairman took pleasure in congratulating, on behalf of the Committee, the Programme Director who had been awarded the prestigious Balzan and African Leadership prizes.
4. The Committee was informed by the representative of the World Bank that the Donor support to the Programme remained strong, although one contributor who had supported OCP for 19 years had recently left. To some extent, the Programme was a victim of its own success insofar as it was close to meeting its final objective which could lead Donors to feel that their support was no longer called for. It was therefore imperative that special efforts be made to maintain Donor support at the required level for the comparatively short time left before the Programme would come to a successful end (paragraphs 38 to 43).
5. The Programme was doing its utmost to keep its expenditures to a minimum by continuously improving its cost/efficiency ratio with the result that savings had accrued during the first two years of the fourth Financial Phase (1992-1997). The process of converting salaries from the WHO/OCP scale to the national level ("harmonization") was now well under way (paragraphs 34 to 36).
6. The Committee noted with satisfaction the results of vector control during the year under review when very few infective flies had been caught and ATPs¹ exceeding 100 were recorded in only 3% of catching points. Larviciding was discontinued on the Bougouriba, Léraba, Red Volta, Oti, and part of White Volta and White Bandama rivers and resumed at the Bambassou (Black Volta) and Kérérou (Mékrou) affluents due to unsatisfactory results of post-control studies (paragraphs 50 to 53).
7. The OCP DNA laboratory in Bouaké was now operational thus permitting differentiation between the different human strains (blinding savanna versus non-blinding forest) and animal onchocercal parasites (paragraph 54).

¹ Annual Transmission Potential: the theoretical number of onchocercal larvae (L3) received by a person stationed at an insect capture point during one year. An ATP at 100 is considered the upper tolerable limit without risk of contracting serious onchocercal ocular lesions.

8. The Ecological Group confirmed that the rotation of larvicides had helped to avoid untoward effects on the aquatic fauna (paragraph 66). The Group authorized the application of a non-organophosphorous larvicide (OMS 3002) on a pilot basis pending a positive evaluation of its effect on non-target invertebrates (paragraph 69).

9. Epidemiological evaluation in areas where larviciding had been carried out for extended periods showed wholly satisfactory results with prevalences below 2% (paragraph 78). Also, follow-up ophthalmological evaluations in Asubende, where larviciding was combined with large-scale ivermectin distribution, showed results after five years similar to those obtained only after 10 years of larviciding alone (paragraph 80).

10. Concern was expressed about a possible overload of operational and scientific data and the Committee warned against pressures on the Programme to deal with peripheral issues and the introduction of new evaluation methodologies which might not be implementable in a devolution situation (paragraph 86).

11. The Committee approved a suggested schema for epidemiological evaluation (paragraphs 88 to 94).

12. In all 1.5 million persons had been treated with ivermectin within the OCP area during the preceding twelve months: 69% through large-scale application, 14% by NGOs, 11% within community self-treatment programmes and 6% in health centres (paragraph 99).

13. The results of ivermectin distribution were encouraging. Thrice-yearly treatment led to a reduction in transmission of 30% to 50% (paragraph 107) and the CMFL¹ had reduced to 6% of the pre-treatment level after five annual distributions (paragraph 108). Computer simulations predicted that combined larviciding/ivermectin treatment caused a permanent decrease in microfilariae production of 33% compared to the level at the previous treatment (paragraph 108).

14. The discussion on devolution centered on the place of onchocerciasis surveillance/control as well as its integration within national health delivery systems (paragraphs 128 and 129). The Committee concluded that pertinent issues had been raised and although not all questions were answered, progress had been made in bringing the devolution process nearer to the operational level (paragraph 140).

15. The Committee after consideration of a paper outlining the interrelationship and structure of the OCP/AFRO/Participating Countries devolution complex, endorsed the concepts and structures with the understanding that the presentation be made more focused (paragraph 135).

16. The Committee learned with interest about a recent initiative by the World Bank in support of devolution in the context of health sector development (paragraphs 136 to 139).

17. The Committee was informed about progress made in the search for a field-applicable macrofilaricide and encouraged the Macrofil project to concentrate its efforts on priority candidates given the likelihood that no funds additional to those originally budgeted would be forthcoming (paragraphs 148 and 149).

¹ Community Microfilarial Load: the geometric mean of microfilariae per skin snip among persons aged 20 years and more, including those with a zero count.

18. In the field of biostatistics, the Committee noted with satisfaction the many varied uses to which the ONCHOSIM model was put (paragraphs 154 and 155) and learned with interest that recent preliminary findings using the model had predicted that combined larviciding and ivermectin treatment could reduce the control period to less than fourteen years (paragraph 159).

19. The Committee reiterated its appreciation of the increasing collaboration between OCP and TDR (paragraphs 62, 106, 152 and 163).

20. In addition to endorsing the recommendations of the Ecological Group (paragraphs 67 to 71) and those relating to research priorities (paragraphs 162 to 171), the Committee made the following recommendations:

- that Participating Countries seek ways and means to ensure continuing employment for their nationals, trained by OCP, in the wider field of environmental monitoring after the end of OCP operations (paragraph 74);
- that the Joint Programme Committee approve the suggested schema for epidemiological evaluation (paragraph 87);
- that OCP continue to be involved in the TDR initiative on operational research (paragraph 106);
- that the work programme of the Macrofil project, endorsed by EAC, should focus on the most promising compounds (paragraph 152).

1. OPENING OF THE SESSION

21. The fourteenth session of the Expert Advisory Committee (EAC) was held at the headquarters of the Onchocerciasis Control Programme in West Africa (OCP) in Ouagadougou, Burkina Faso, from 7 to 11 June 1993.

22. In opening the session, the Chairman, Professor D. Molyneux, welcomed the new members of the Committee, Prof. (Mrs) Adenike Abiose, Prof. A. Degrémont, Dr J. Grunewald and Prof. G. Webbe. He looked forward to their contribution to the work of the Committee, hoping that they would have as much satisfaction from their association with OCP as he had experienced himself.

23. The Chairman further welcomed Dr F. Wurapa who represented the WHO/AFRO Regional Director, Dr Y. Genevier of the World Bank, Dr M. Pacqué of "Sight Savers" and the National Oncho Coordinators from Côte d'Ivoire, Guinea and Mali.

24. The briefing session held on the Saturday preceding the EAC session had been most instructive, and the Chairman thanked the Director and his staff for the efforts that had gone into its preparation and for their informative presentations.

2. ADOPTION OF THE AGENDA

25. The following agenda was adopted by the Committee:

- A. Opening of the session
- B. Adoption of the agenda
- C. Follow-up of EAC.13 recommendations
- D. Matters arising from the thirteenth session of the JPC
- E. Administrative and financial briefing
- F. Reports of field visits by EAC members
- G. Review of vector control operations
- H. Review of the report of the fourteenth session of the Ecological Group
- I. Review of epidemiological evaluation activities (including consideration of report to JPC.14 concerning OCP strategy in this field (ref. paragraph 6.19 of JPC.13 report))
- J. Review of disease control with ivermectin
- K. Review of devolution activities (including consideration of report to JPC.14 concerning the OCP/AFRO devolution machinery (ref. paragraph 7.12 of JPC.13 report))
- L. Review of the Macrofil Chemotherapy Project (formerly Onchocerciasis Chemotherapy Project)
- M. Review of biostatistics and information systems activities
- N. Identification of research priorities
- O. Other matters
- P. Date and place of EAC.15
- Q. Adoption of the draft report
- R. Closure of the session.

Rearrangement of agenda items has been made in the report for ease of presentation.

3. FOLLOW-UP OF EAC.13 RECOMMENDATIONS

26. The Programme Director in referring to the thirteen recommendations made by EAC at its June 1992 session, listed the action taken as follows:

- i) number of successive cycles of pyraclofos on the same river stretch had been restricted to avoid resistance developing;
- ii) IRU Bouaké had received additional resources to accelerate insecticide screening;
- iii) the new illustrated guide on the cytotoxicity of *S. damnosum* complex was in print and would be used in training programmes;
- iv) public information on OCP activities had been strengthened;
- v) CSA had established a working group to carry out a pilot project on the Environmental Impact of Resettlement on rivers, with Prof. Calamari as chairman, for which external funding had been obtained;
- vi) guidelines had been prepared to help peripheral health staff to diagnose and treat onchocerciasis;
- vii) community self-treatment was being encouraged with considerable success;
- viii) follow-up studies on the effect of ivermectin on ocular manifestation was continuing;
- ix) OCP was coordinating the field testing of the cocktail of antigens used in the immunodiagnostic test;
- x) the Programme Director presented a revised budget for Macrofil activities to JPC at its December 1992 session; the Committee decided that extra funding be met from savings which might, or might not, be possible;
- xi) education and information efforts of the Devolution Unit were being reinforced;
- xii) OCP, CSA and WHO were looking into how OCP structure and know-how could be involved in strengthening public health systems in the Participating Countries.

27. In connection with the last-named recommendation, the Programme Director stressed the overall agreement that elements of OCP would continue beyond the end of Programme operations, but that the modalities would be examined by CSA as well as in the context of the Mid-term (Phase IV) Prospective Evaluation now under preparation.

4. MATTERS ARISING FROM THE THIRTEENTH SESSION OF THE JPC

28. The Chairman of EAC in summarizing the debate that took place at the 1992 session of JPC noted that the JPC Chairman when opening the session, had underlined the particular importance of devolution, environmentally safe resettlement and the eventual use of OCP experience and facilities to strengthen the health systems in the Participating Countries.

29. JPC learned with pleasure that Dr Samba had received the prestigious Balzan and African Leadership (Hunger Project) prizes and Prof. Molyneux, on behalf of EAC, congratulated the Programme Director on this recognition of his achievements on the national and international scenes.

30. Of particular interest to EAC was a request by JPC.13 to the Programme Director to review, in consultation with Chairman EAC, current and potential diagnostic methodologies in the context of OCP epidemiological evaluation activities. The Joint Programme Committee also requested the Committee of Sponsoring Agencies to review the issues inherent in a paper dealing with a proposal for Multidisease Surveillance and Control in the context of devolution and report its findings to JPC in December 1993. Prof. Molyneux pointed out in this connection that there was ample justification from previously agreed documentation (e.g. Planops, External Review) for addressing this issue.

31. JPC had requested the CSA to present to the Committee at its next session further details of the OCP/AFRO national devolution structure and of the responsibilities and roles of the various entities involved.

32. In commenting on the summary presented by the Chairman of EAC, it was pointed out, in connection with the review of diagnostic methodologies, that the eventual introduction of new methods could make it difficult to compare earlier findings based on the now well established evaluation procedures; the need to maintain a consistent approach to the acquisition of data in areas which had been under study for many years was important not least in being able to adjust parameters in epidemiological models (see also paragraph 86 below).

33. In reply to a question regarding the role of OCP in the field of socioeconomic development in oncho-freed zones, the Committee was reminded about the objective of the Programme calling for the elimination of onchocerciasis "as a disease of public health importance and as an obstacle to socioeconomic development throughout the Programme area and for the Participating Countries to maintain this achievement". The Programme Director traced the history of OCP and support to socioeconomic development which was not within the terms of reference of OCP itself. The Committee of Sponsoring Agencies (CSA) was now undertaking a pilot project on the Environmental Impact of Resettlement on rivers and organizing a Ministerial Meeting on Policy Issues for Sustainable Land Settlement to be held in Paris during April 1994.

5. ADMINISTRATIVE AND FINANCIAL BRIEFING

34. The Chief of Administration and Support Services in his presentation stressed the considerable efforts made by the Programme to seek savings whenever possible with a view to keeping well within the approved annual budgets and budgetary forecasts in the Plan of Operations for the fourth Financial Phase (1992-1997). Purchases were made only if absolutely necessary to ensure efficiency of operations also taking into consideration that the Programme would come to

an end within the foreseeable future. The expenditures for 1992 were thus below the allocated budget and savings were also expected for 1993.

35. The activities connected with vector control accounted for 65% of the budget, the Macrofil project for 15% and the Administration for 11%. The exchange rate between US dollar and CFA (45% of all expenditures) had been set at 285 but had now reduced to 273 resulting in a loss of approximately US \$ 500 000 per year.

36. As regards human resources the Committee was informed that in all about 800 staff were employed on OCP related activities distributed as follows: 230 on WHO/OCP contract (28 professionals, 202 General Service), 335 belonging to national teams and 250 who were under "harmonization" in the Original Programme area since 1 January 1993. The last-named category of former OCP staff was "turned over" to their respective governments with national scale salaries paid by OCP. The "harmonization process" had been difficult but met with understanding by all concerned. The staff in question had received compensation at a level of 50% over and above what is normally paid by WHO.

37. The Committee was provided with details regarding the OCP computerized financial information system which allowed for instant review of expenditures broken down according to Unit activities and their components.

38. Mr Bruce Benton responsible for the Onchocerciasis Unit at the World Bank and current Chairman of the Committee of Sponsoring Agencies, informed EAC about the situation regarding funding of the Programme. When the Fund Agreement for the fourth Financial Phase was signed 16 months ago, Donors had pledged US \$ 150 million to an estimated budget of US \$ 175 million for the 1992-1997 period.

39. However, one Donor had recently left after 19 years of association with the Programme and several others had reduced their contributions relative to Phase III. There was still a strong support for OCP within the Donor community, the reductions being due to the prevailing recession and, to some extent, a shift in Donor orientation to other target groups. Also, there was a risk that the success of the Programme meant to some Donors that the objective had already been met while the strong move towards devolution could give the impression that there was less need for resources by OCP as such.

40. To meet the anticipated shortfall, OCP would continue to economize wherever possible, the Bank would seek to attract new Donors, and Mr Benton, together with the Programme Director, would increase visits to Donors to ensure their continuing commitment.

41. On the subject of World Bank support to devolution, the Committee was informed that letters from the Chairman, CSA, had been sent to the eleven Participating Countries indicating that the World Bank was willing to consider financing devolution plans as part of health sector projects, wherever bilateral assistance was not forthcoming (see also paragraphs 136 to 139).

42. Mr Benton finally referred to the CSA promoted pilot project on Environmental Impact of Resettlement on rivers within the OCP area and the Ministerial Meeting on Policy Issues for Sustainable Land Settlement within the OCP Area (April 1994) as examples of initiatives of the Committee of Sponsoring Agencies in the field of socioeconomic development; separate donor financing had been secured to support these initiatives.

43. The Programme paid tribute to Mr Benton's successful effort to ensure sound financial backing of OCP operations and appealed to EAC members to use their influence with Donors to maintain their support to the Programme.

6. REPORTS OF FIELD VISITS BY EAC MEMBERS

44. The Chairman in reporting on his recent visit to the Programme area, stressed the significant developments resulting in enhanced cost-effectiveness, that had taken place since he last visited the area. Such developments included an improved hydrological surveillance system, an automatized aerial spraying system, codification of breeding sites, the setting up of a DNA laboratory for operational purposes (a "first" in the world), improved insecticide assays, the cessation of larviciding in the major part of the Original Programme area, intensive ivermectin distribution using different modalities, and strengthening of epidemiological activities via national team activities.

45. Drs Aboagye-Atta and Franklin reported on a joint visit to Mali and Burkina Faso during which they had observed most of the operations undertaken by, or under the aegis of, OCP. The general impression was one of efficiency on the part of both OCP and national staff, all adhering strictly to the established procedures of the Programme.

46. The visitors were informed that in two villages visited by epidemiological evaluation teams, the inhabitants had refused skin snipping on the grounds either that in neighbouring villages ivermectin was distributed without skin snipping, or that the inhabitants had been told that ivermectin was highly effective and that, therefore, there was no need for skin snipping, or that this procedure had now been applied regularly since 1974 and people would no longer submit to this examination. It was explained that, at least in one case, the fault was due to lack of involvement of the local health staff.

47. In response to a question regarding the relationship between newly established local devolution committees and village health committees the Committee was reassured that close contact and collaboration was maintained between the two.

48. The importance of education on onchocerciasis, its transmission and control, which should be carried out among school children, was stressed. It was explained that national teams should contact teachers on their field visits and that representatives of educational departments were included in the membership of National Devolution Committees.

49. The Chairman expressed the Committee's gratitude for the efforts made by OCP staff in preparing the visits and assisting the visitors. The Programme Director assured the Committee that this was a two-way interaction insofar as both he and OCP staff always learned from reports submitted by EAC members.

7. REVIEW OF VECTOR CONTROL INCLUDING REPORT OF THE FOURTEENTH SESSION OF THE ECOLOGICAL GROUP

Overview of operations and their results

50. The Committee was informed that the results of larviciding during the last year had been satisfactory in all the areas where vector control was carried out. Only four infective flies were caught in 140 catching points during the first week of May with a similar result from 260 points during the first week of October. ATPs exceeding 100 due to savanna species were recorded in as few as 3% of catching points which were confined to southern Côte d'Ivoire and the Southern Extension area.

51. The joint effect of vector control and large-scale ivermectin distribution was again noted, in particular in Guinea where the ATPs decreased below 100 after only two years of control, a result which would previously require eight to nine years of larviciding as the sole means of control. However, such findings needed verification before concluding that the addition of ivermectin distribution to larviciding would shorten the period of application of the latter (see also paragraph 159 below).

52. Larviciding had been discontinued on the Bougouriba, Léraba, Red Volta, Oti and part of White Volta and White Bandama rivers while vector control was resumed at the Bambassou (Black Volta) and Kérérou (Mékrou) affluents where post-control studies showed unsatisfactory results; these resumptions would be time-limited until more detailed epidemiological investigation had been carried out (see also paragraph 63 below).

53. Post-control entomological surveillance carried out two years after the cessation of larviciding in a given area confirmed that the risk of transmission had been virtually eliminated in such areas insofar as practically all the sites of evaluation reported less than 1 per 1000 of the parous females as being infective, a threshold below which the risk of recrudescence was negligible.

54. The OCP DNA laboratory in Bouaké was now fully operational. The analyses enabled the Programme to differentiate the human *Onchocerca volvulus* from the animal *O. ochengi* and other animal *Onchocerca* species and to distinguish the savanna strain from the forest strain. The application of the DNA technique thus made it possible to ensure that vector control was confined to areas where savanna strains were prevalent.

55. As regards larviciding operations, the Committee was informed that problems with *B.t.* H-14 batches (reported to EAC in June 1992) had necessitated a doubling of the dose delivered, hence causing an increase in flight hours. Since then the manufacturer had provided *B.t.* free of charge in formulations fully satisfactory to the Programme. The insecticide rotation scheme was adhered to throughout, and successfully so, insofar as no decrease in susceptibility, particularly to temephos, was reported.

56. With respect to the quality control of *B.t.* H-14 formulations, IRU/Bouaké was now substituting the use of an orbital shaker for that of minigutters. Also, as noted by the Committee, progress had been made by IRU, in collaboration with the Pasteur Institute, Paris, as regards identification of the *B.t.* H-14 toxin which killed the blackfly larvae. The toxins effective on blackflies and on mosquitoes were not the same. With these results the rapid and rational design of improved *B.t.* H-14 formulations could be envisaged for the first time.

57. Steady progress was reported in cost/effectiveness of spraying operations aided by the installation of computers aboard the helicopters. More particularly, the cost of pyraclofos applications had proved acceptable in the long run in spite of its high purchase price, due to its long carry. The new aerial contract, featuring a decrease in the cost of flight hours and the exclusion of the Thrush and liaison aircraft, came into effect on 1 January 1993 and had been implemented without problems. Recent estimates had set the upper limit of cost/efficient aerial larviciding at US \$ 40 per treated river kilometre.

58. A special study had been made by staff at the Western Zone office to quantify the use of the various larvicides at different river discharges taking into consideration a series of parameters such as costs of the compounds, their carry, transportation costs of insecticide and helicopter fuel, and the cost of flight hours. A model had been developed for eventual use throughout the area with a view to further improving the cost/efficiency ratio of control operations.

59. New morphometric criteria easily applicable under field conditions for adult *Simulium* identification had been developed and training of cytotaxonomists had been successfully completed in Kankan and Makeni thus providing programme-wide cytotaxonomic facilities. The development of morphometric identification methods for adult blackflies had been achieved through a TDR student whose field work had been undertaken in the Programme area. The utility of this technique had major implications for OCP operations and exemplified the value of TDR/OCP relationships.

* * *

60. The Expert Advisory Committee noted with satisfaction the progress made in vector control operations and congratulated the Programme on the results obtained in particular as regards constantly improved cost/efficiency. In this connection, the Committee paid tribute to the excellent performance of the helicopter pilots who, operating under strenuous climatic conditions, made an essential contribution to the success of the Programme.

61. The question of cessation of larviciding in the north-eastern part of Sierra Leone, due to lack of security, was raised. It was pointed out that the dominant blackflies in that area were *Simulium leonense*², *S. squamosum* and *S. yahense*, essentially forest species which did not migrate and, therefore, did not pose a threat to other parts of the Programme area. In spite of the unrest, national teams had succeeded in maintaining a reasonable ivermectin coverage of the populations concerned.

62. The Committee was impressed by the collaboration established with the TDR programme (morphometrics, DNA facility, immunodiagnosis, see para 163) and recommended that the Director pursue and strengthen such collaboration in all fields of operations, whenever this would be of benefit to OCP and to TDR.

63. As noted by the Committee, larviciding had been resumed in two river stretches where the post-control entomological surveillance had shown unsatisfactory results (see also paragraph 52 above). To the question of how long this resumption would last, it was explained that aerial larviciding was time-limited to allow in-depth epidemiological studies. As soon as the villages where the results were poor were detected they would be treated with ivermectin and larviciding would cease. New post-control studies would be conducted later.

² Formerly *Simulium soubrense* B

64. In connection with a breakthrough in the improvement of *B.t.* formulations achieved in collaboration with the Pasteur Institute of Paris, the issue of legal aspects of property rights was raised with the hope that legal arguments would not delay the operational use of any improved formulations developed through this joint research.

Report of the fourteenth session of the Ecological Group

65. The report of the fourteenth session of the Ecological Group is attached as Annex 1.

66. In presenting the report, the Chairman of the Ecological Group stressed the Group's satisfaction with the continued satisfactory results obtained by systematic rotation of larvicides both in terms of reducing the risk of resistance in blackflies and of avoiding untoward effects on the aquatic fauna. The Group took note of the following limits for the application of larvicides: temephos up to 400 m³/s; pyraclofos 15-250 (300) m³/s; permethrin 70 m³/s and above; carbosulfan 70-150 m³/s; and Vectron (see paragraph 69 below) up to 350 m³/s.

67. In response to a concern that permethrin had been applied at Tienfala on the Niger for more than the recommended maximum six cycles, due to discharges in excess of 200 m³/s for several months, the Group's attention was drawn to an experiment on River Sanaga in Cameroon. There, 40 kilometres had been treated weekly with permethrin for more than two years with no, or insignificant, effect on the adult *Trichoptera*, *Baetidae* and *Hydropsychidae* while a lowering of the faunal density was experienced. In the light of these findings, the Ecological Group recommended that a spot evaluation of the impact of permethrin on the non-target insects be made in River Niger and that documentation on the River Sanaga experience be made available to the Group.

68. As a result of a special training programme on testing of susceptibility of non-target organisms to insecticides, the national hydrobiologists were now capable of identifying, up to the larval stage, several organisms widespread in the Programme area, although appropriate field applicable tests were still to be developed. The Ecological Group recommended the experimental use of *Cheumatopsyche copiosa* for shaker-technique tests.

69. The Group noted the progress made in the search for a non-organophosphorous larvicide effective at river flows between 15 and 70 m³/s with focus on a pseudo-pyrethroid³ OMS 3002 which had a low fish toxicity (Trebon in agriculture and Vectron in public health), and authorized the Programme to apply it in pilot larviciding pending a positive evaluation of its effect on non-target invertebrates.

70. Based on the findings of an analysis of long-term benthic insects monitoring data, the Ecological Group recommended that only 1700 hours data should be collected as day-time drift and that the Elouard-Simier index should be used routinely for the testing of new insecticides to predict their potential on non-target insect populations. It had been observed that long-term fluctuations in fish populations were influenced by drought rather than by larvicides applied by OCP.

³ Explanatory note. Pyrethrins are naturally occurring insecticides. Man-made insecticides which mimic natural pyrethrins are called synthetic pyrethroids. Pseudo-pyrethroids are molecularly different from synthetic pyrethroids but behave similarly to them.

71. As regards aquatic monitoring, the findings reported to the Annual Meeting of Hydrobiologists (12-18 January, Cotonou) revealed only insignificant modifications of the entomofauna and of the fish fauna as a result of OCP larviciding. The Ecological Group, in response to the findings of the Meeting, made a number of recommendations including the provision to hydrobiologists of the material necessary for more intensive water quality analysis; annual visits to OCP headquarters for hydrobiologists to participate in the processing of their "own" data as well as those collected during visits to other OCP countries approved by the Director; and support for the preparation of joint publications.

72. The Ecological Group endorsed the purpose and methodological approach inherent in the "Draft Proposal for a Pilot Project on the Environmental Impact of Resettlement on Rivers in the OCP area", prepared by the Committee of Sponsoring Agencies and presently under implementation.

73. The Group stressed that devolution was a concept that had been successfully applied to hydrobiology teams since the start of OCP operations and that it was not too early to start thinking of how best to involve these teams in activities additional to aquatic monitoring in the broader field of environmental monitoring, especially in view of the biodiversity convention signed in Rio de Janeiro.

* * *

74. Several issues were raised by EAC members in connection with the report. There was real concern that the exceptional expertise accumulated by the national teams be retained for the benefit of the Participating Countries after OCP came to an end. In a few cases members of the national monitoring teams were already connected with teaching at university level and national institutes. The Committee recommended to the Participating Countries that they seek ways and means to ensure continuing employment for their nationals, trained by OCP, in the wider field of environmental monitoring after the end of OCP operations.

75. It was suggested that contact with UNEP in connection with environmental issues of interest to OCP might be useful and the Programme Director was encouraged to look into the possibility of establishing such contacts. Also, TDR had recently strengthened its interest in "tropical diseases and the environment" a field, therefore, in which OCP and TDR could eventually collaborate.

76. The Committee requested the Chairman of the Ecological Group to transmit its gratitude to the members of the Group for the important work they so successfully carried out.

8. REVIEW OF EPIDEMIOLOGICAL ACTIVITIES AND DISEASE CONTROL WITH IVERMECTIN

Evaluation

77. The Committee was informed that epidemiological evaluation had been carried out during the preceding 12 months in 56 villages within ten river basins in the Original Programme area, partly with a view to determining the effect of vector control in terms of reduction in prevalence rates, partly to contribute to decisions concerning cessation of larviciding.

78. In respect to the effect of vector control, most of the results were satisfactory with prevalence below 2% on the Banifing IV in Mali, the Niger basin in Niger and Oti in Togo. However, a cluster of villages on the Oti basin in Ghana showed prevalences ranging from 6.9% to 12.1%. The evaluation of indicator villages on the rivers where larviciding was discontinued (see paragraph 52 above) had shown a prevalence below 2%.

79. Another 48 villages, situated in areas where vector control was combined with ivermectin distribution, were examined during the June 1992-May 1993 period. This included villages in the Southern Extension area, the intermediate zone, in Côte d'Ivoire and in the southern part of Guinea. The parasitologically negative villages would constitute a cohort of individuals for follow-up in respect to incidence of infection. A special study was initiated in Guinea where three villages were selected for continuing *in vivo* surveillance regarding possible lowered microfilarial susceptibility to long-term ivermectin treatment (see also paragraphs 94 and 146 below).

80. On the side of ophthalmological evaluation, the Committee noted with satisfaction that follow-up examination in Asubende after five years of annual ivermectin distribution accompanying larviciding had produced results that were similar to those obtained after 10 years of larviciding alone. The microfilarial load in the anterior chamber had thus been significantly reduced accompanied by a significant reduction in iridocyclitis and sclerosing keratitis (see also paragraph 111 below).

81. Migration studies carried out in the Kulpawn Basin in Ghana and on the Bou-White Bandama in Côte d'Ivoire showed a comparatively high prevalence in the former area as being due to "local" transmission while in the latter area more than 90% of the skin snip positive individuals were migrants.

* * *

82. During the discussion on this agenda item, the potential importance of entomo/epidemiological surveillance (see paragraph 93 below) for the detection of recrudescence was underlined. As regards the contribution of sociologists to epidemiological evaluation, and in particular to the migration aspect, it was explained that rather than maintaining a full-time staff member in Ouagadougou, who could have difficulties in conducting and interpreting survey findings in other cultures than his own, the Programme employed consultants working in their own national environment.

83. Although the importance of scientific and reliable ophthalmological investigations was recognized, it was pointed out that the need for such examinations had lessened given the now well-established understanding of the effects of control methods, and that part-time consultant ophthalmologists could easily cope with the workload. Also it was now necessary to gear operations towards the conditions under which devolution activities would be conducted and it was unlikely that national health administrations could afford the use of ophthalmologists in this connection although they could possibly be employed in multidisease control situations.

84. A representative of an NGO explained that throughout the OCP area there was only one ophthalmologist for one million people. NGO policy in both the OCP area and outside did not involve routine ophthalmological evaluation as the efficacy and safe nature of the drug did not require such evaluation.

85. In respect to the possibility of introducing immunodiagnosis in replacement of, or in addition to, skin snipping for purposes other than detection of recrudescence, concern was expressed about comparability between the two methods.

86. Members of the Committee also expressed concern that OCP might be moving towards an overload of operational and scientific data and that there was a risk of pressure for the Programme to deal with peripheral issues whilst the introduction of new methodologies of evaluation could lead to problems of interpretation. Furthermore, such new methodologies might not be in place before the Programme came to an end and would not necessarily fit with devolution activities.

87. The Committee expressed its complete confidence in the current epidemiological techniques within the recognized limits and recommended the adoption by the Programme of the suggested schema for epidemiological evaluation following the recent meeting convened by the Director of the Programme in consultation with the Chairman of EAC (see following paragraphs).

Future strategy for epidemiological evaluation

88. Given that the large-scale distribution of ivermectin tended to mask the diagnostic value of skin-snipping, in itself less and less acceptable to the communities, also in view of the fear of HIV infection, and the comparatively high cost of ocular assessment, the Joint Programme Committee at its December 1992 session requested the Director to establish an expert group to reflect on all aspects of epidemiological evaluation and report its findings to the 1993 session of JPC.

89. Consequently, a special group was set up during the March 1993 Internal Technical Review meeting whose findings and recommendations could be summarized as follows.

90. For morbidity control, the evaluation was geared to measuring the impact on ocular disease through longitudinal follow-up of eye changes, ideally with the help of photographic records to minimize inter and intra observer variations. It was noted that ophthalmological examination was expensive and time-consuming and unlikely to be sustainable post-OCP on a large scale (see also paragraphs 83 and 84 above).

91. When larviciding was the sole means of control with the specific aim of interrupting transmission, epidemiological evaluation relied on skin-snipping to measure the impact on the basis of prevalence trends or, if possible, using the incidence of infection in the younger age groups. Drawbacks of this methodology were the low level of sensitivity in light infections and increasing reluctance to submit to skin-snipping which, it was hoped, might eventually be replaced by a serological test. In cases where ivermectin distribution was added to vector control, considerations were similar to those applying to larviciding alone with the exception that skin-snipping would be reserved for assessing incidence of infection in groups of individuals excluded from ivermectin treatment (e.g. children born after start of vector control). The Programme had throughout its history of epidemiological activities in the Original OCP area defined the ophthalmological impact of vector control alone which had already been published.

92. Although evaluation of the impact of interruption of transmission on the human reservoir of the parasite would be desirable for the purpose of deciding on cessation of larviciding, no methodology was presently available that allowed detection of parasite antigens although the Polymerase Chain Reaction (PCR) methodology showed promise for detecting parasite DNA in the blood of patients.

93. As regards detection of recrudescence, epidemiological evaluation would make use of skin-snipping to demonstrate the re-emergence of infected cases although this methodology was deficient in detecting pre-patent, early and light infections. Hopefully, the availability in the near future of a reliable serological test would overcome this shortcoming. To complement epidemiological surveillance, consideration was given to the possible role of entomological examination based on identification of the parasite in flies collected by villagers and the use of DNA-probe techniques for its detection in mass collections of flies (see also paragraph 118 below).

94. The Group finally looked into the detection of possible lowered susceptibility to ivermectin and recommended using the skin snip methodology as a means to detect abnormal increases in the skin microfilarial load from one ivermectin treatment to the next. Any patient showing poor response to standard ivermectin treatment, should be identified for possible future studies.

95. In connection with the search for improved diagnostic tools, the Expert Advisory Committee was informed that the Immunodiagnosis Subcommittee of the TDR Filariasis Steering Committee at its March 1993 session concluded that the tri-cocktail antigen (Ov7, Ov11 and Ov16) for detection of *O. volvulus* could now be field tested within the OCP area after training of staff and the establishment of laboratory facilities in Bouaké. The purpose would be to determine the specificity of the antigen cocktail among children unexposed to onchocercal infection and to confirm its sensitivity to detect patent infection using sera from Pendie and other localities. The Filariasis Steering Committee also recommended that blood samples for future reference be collected from villages at risk of recrudescence.

Ivermectin distribution

96. Large-scale application of ivermectin treatment continued to be carried out by national teams supported financially and logistically by the Programme, by VCU teams or, in a few cases, local teams aided by NGOs. The Committee noted that priority continued to be given to communities with Community Microfilarial Loads of 10 mf/s and more, essentially in the Extension areas in conjunction with vector control, while the lower limit in the northern half of the Western Extension area, where ivermectin was the only means of control, was set at 5 mf/s. Within the Original Programme area, large-scale distribution continued in the Pendie area, previously reinvaded zones, the Bui and Kulpawn-Sissili areas as well as in the intermediate zones in southern Côte d'Ivoire.

97. It was reported that the community self-treatment programme was making progress, in particular in Mali. The villages selected literate members of their community to carry out the distribution under the supervision of the nearest health centres. The permanency of distributors ensured a coverage at the highest possible level by including pregnant women soon after childbirth and mothers following the first week of breastfeeding, as well as temporary absentees and immigrants.

98. Passive treatment with ivermectin, instituted by qualified health staff in fixed centres or hospitals on the basis of clinical or parasitological diagnosis, was essentially reserved for zones of low level endemicity not included in the large-scale distribution programme.

99. In all 1.5 million individuals in 5000 villages were treated with 2.24 million tablets during the period in question. The coverage oscillated between 69% and 78%, the latter obtained in villages with community self-treatment programmes. Large-scale distribution, supported by OCP, accounted for 69% of the treatments, NGOs for 14%, community self-treatment for 11% and treatment in health centres for 6%.

* * *

100. During the discussion on ivermectin distribution, questions were raised regarding passive against active application, integration within the existing health infrastructure and community self-treatment.

101. OCP had started as a vertical programme in the Participating Countries, although all were equipped with onchocerciasis control services, they did not have the necessary resources to individually implement the technologically advanced operations of the Programme.

102. The involvement in, and participation of, the countries themselves in OCP activities were now well established and efforts were made to increase health centre-based ivermectin distribution. Progress had been made and in one country a considerable proportion of the treatments were given in fixed centres. However, integration posed problems such as inducing people to report for treatment when free from symptoms, and large-scale distribution by national teams remained so far the method of choice also from a cost/efficiency point of view as a high proportion of villages only had insufficient health infrastructures.

103. Community self-treatment had been expanded in Mali, in particular, since the 1992 session of EAC and the Committee noted with interest the considerable advantages of this methodology including its cost/effectiveness and its persistently high level of coverage.

104. The Committee was informed that WHO had recommended the inclusion of ivermectin on national lists of essential drugs but noted in this connection that as the drug was so far not available on the market, it could not be made available through this mechanism.

105. As regards the contribution of Non-governmental Organizations to national ivermectin distribution programmes, it was pointed out that NGOs were essentially concerned with the distribution itself making full use of the epidemiological maps prepared by OCP to identify with national authorities the target populations. Such organizations were not involved in impact analysis but used coverage indices as indicators of achievement.

106. The Committee was informed about the TDR initiative on operational research in support of ivermectin-based control in non-OCP countries. The initiative had focused on Nigeria only, but recently it had been expanded to other endemic countries such as Cameroon. Issues addressed under the initiative were rapid assessment methods to identify high-risk communities and for nationwide epidemiological mapping, health education for sustained compliance, cost-effective delivery methods, the importance of onchocercal skin disease, simple methods for monitoring of control etc. Research findings had already resulted in improvements of control operations. The Committee expressed considerable interest in the initiative and recommended that, because of the potential relevance for devolution, OCP continue to be involved.

Impact of ivermectin distribution

107. The Committee was informed about the progress made in various studies undertaken by OCP concerning the impact of ivermectin distribution. As regards thrice-yearly treatment as applied in Guinea-Bissau, entomological data indicated a reduction of transmission over twelve months of between 30% and 50%. However, as the findings did not allow for definitive conclusions, further studies in the same area or in the northern half of the Western Extension area were envisaged.

108. In the Asubende area where ivermectin was dispensed in conjunction with larviciding, the CMFL in a cohort had reduced to 6% of the pre-treatment level after five distributions over 60 months. A model analysis using the Asubende data showed that the combined larviciding/ivermectin treatment caused a permanent decrease in the production of microfilariae after each treatment, estimated at 33%, compared to the level at the previous treatment.

109. Another model simulation predicted that annual ivermectin treatment in areas with ongoing transmission during less than 20 years would fail to eliminate the human reservoir of the parasite.

110. A special study comparing the impact on transmission of larviciding as the sole means of control (in the Original Programme area) with that of vector control and ivermectin distribution combined (in Guinea) had shown that while before treatment only 24 parous females were needed in Guinea to produce one infective larva as many as 105 were needed three to four years after. This was in contrast to the experience in the Original area where, without ivermectin, after four years of larviciding one infective larva was produced by as little as 21 parous females (practically unchanged from 15 before treatment).

111. The Committee noted that further studies in the Asubende area had confirmed the impact of ivermectin on the evolution of ocular lesions. After five years of annual treatment living microfilariae had disappeared from cornea and the geometric mean of microfilariae in the anterior chamber had reduced from 3.8 to 0.1, results requiring 10 years of vector control without ivermectin treatment. With regard to the evolution of ocular lesions of the posterior segment, no significant change was noted.

112. Using questionnaires and placebo groups, studies were underway to determine the level of awareness of onchocerciasis and the perceived benefits from ivermectin treatment among villagers in infected zones.

9. REVIEW OF DEVOLUTION ACTIVITIES

113. A detailed work plan for the OCP Devolution Unit was presented to the Committee. The principal activities in support of national efforts programmed for 1993 centered on training; awareness-raising; epidemiological surveillance and ivermectin treatment; preparation and updating of devolution plans; evaluation; and operational research.

114. In addition, OCP would encourage and make it easy for the Participating Countries to set up National Devolution Committees (NDC) to enhance national capabilities to undertake multidisease surveillance and control with onchocerciasis as one of the target diseases. NDCs would be operations-oriented with a membership drawn from departments contributing directly or indirectly to epidemiological surveillance and control activities. National Onchocerciasis Committees could provide central back-up support to the NDCs which were already being organized in most of the Participating Countries.

115. The Committee considered a paper outlining the institutional framework for devolution prepared at the request of the Joint Programme Committee at its December 1992 session for its consideration in December 1993. The paper described in detail the structure and functions of the OCP Devolution Unit, of the WHO/AFRO Devolution Support Team and of the NDCs currently being established. In response to the wish of JPC, special attention was given to the support provided by AFRO through the contributions of the Intercountry Devolution Coordinator and WHO-AFRO Devolution Support Teams of which one had been set up in Burkina Faso on a trial basis.

116. The Expert Advisory Committee was provided with up-to-date information regarding the preparation, revision and implementation of devolution plans as well as the various strategies adopted by the Participating Countries in terms of target diseases combined with onchocerciasis in their epidemiological surveillance and control programmes. Following a meeting at OCP headquarters with the eleven National Coordinators of the Onchocerciasis Control Programme, a series of recommendations were adopted aiming at strengthening the devolution process and the role of the Coordinators therein.

117. As regards training for devolution, OCP had granted 23 fellowships during the period August 1992 to May 1993 of which 5 had been given to females, thus bringing the awards since 1974 to a total of 381.

118. In view of the increasing difficulties encountered in the systematic application of the skin-snip test due to community-wide ivermectin distribution and reluctance to submit to repeated testing (see also paragraph 88 above), consideration was given to the use of entomological surveillance based on blackfly catching by villagers, dissection by national technicians and *Onchocerca* identification by DNA probe. The feasibility and modalities of this additional method of surveillance in the context of devolution were still in the investigative stage.

119. In the introduction to this item of the agenda it was stressed that successful devolution, implying effective epidemiological surveillance and the control of recrudescence with ivermectin, was a sine qua non for OCP to reach its objective.

120. The strategy for devolution varied according to the epidemiological and control situation within the Programme area. In the Original OCP area the human reservoir of the parasite had been virtually eliminated and surveillance was underway. In the northern half of the Western Extension area the strategy was based on ivermectin distribution only and hence the question of detection and control of recrudescence of infection did not arise.

121. The concept of integration needed clarification. WHO would be well-situated to translate the concept into operational terms, to work out organizational approaches and to undertake the necessary training focusing on trainers. The principle of integration was inherent in all devolution plans but until now little had been done in terms of adjusting structures to integration in health systems where vertical programmes were common. Until the concept became operational, efforts should be made to at least coordinate vertical programmes.

122. External support to the implementation of devolution plans had, so far, been rather slow in forthcoming.

123. Epidemiological surveillance in the context of devolution was now being implemented in countries within the Original Programme area. In all, 177 villages had been identified for inclusion in the surveillance programme.

124. At the opening of the debate on this agenda item, the issue of the place of devolution within the health infrastructure as a fully integrated activity was given priority attention. In this connection, reference was made to the report of the External Review team in which particular stress was laid on the need for health systems research geared to finding cost-effective ways and means of integrating onchocerciasis surveillance and control with such other "vertical" programmes as the Expanded Programme on Immunization, Mother and Child Care and Family Planning.

125. In this connection, the need for a thorough analysis of the various health systems and their modes of operation was underlined. Guidelines should be worked out at an early date.

126. One of the Members of the Committee presented a conceptual diagram of a health system with emphasis on activities at the district and local levels rather than at the central "vertical level". The diagram (attached as Annex 2) also showed the distribution of the various categories of donors by operational levels and the interrelationship between these levels.

127. The basic concept behind the new health systems approach was the need for populations to have their health concerns taken care of in an effective manner by shifting the emphasis from the centre to the district/community level, promoting partnership/involvement and avoiding overloading of the local health workers. A special feature was the move towards a reasonable cost-recovery system on the lines of the Bamako-Initiative.

128. With respect to an eventual integration of devolution within such a framework it was suggested that some activities might gradually be decentralized to the district level in an integrated manner, based on "coincidence of objectives" with those of other programmes conducted from that level, a rationale for the analysis of health delivery systems and their management (see paragraph 125).

129. The Committee expressed considerable interest in the concept and discussed the question of integration. The potential contribution of OCP to the process, given its area-wide operations and close contact with national authorities, should not be underestimated. The change in structures required change in attitudes a field in which the Programme could help, bearing in mind that OCP's mandate was confined to onchocerciasis control, including support to the devolution process.

130. The Committee considered a series of operational issues connected with the devolution process. The "animators" working across several borders might encounter difficulties in adapting to different health structures, but OCP field staff were familiar with conditions in all the countries in which they worked and to which they undertook regular missions. Another issue was the place in the health structure pyramid of the National Onchocerciasis Coordinators and their interaction with colleagues in other departments. The Committee was reassured that the Coordinators were well placed within their national administrations.

131. The AFRO Inter-country Devolution Coordinator summarized his activities during the last two years. He was working in tandem with OCP staff with whom he undertook joint country visits. He paid particular attention to the "training of trainers" concept which he promoted in interested countries. He emphasized the need for retaining within the national services former OCP staff so as to harness their unique expertise.

132. The representative of the WHO Regional Office reiterated the interest in, and support to, the OCP countries now in the process of preparing for, or implementing, devolution. The Organization did its best to work with the Participating Countries towards reorganizing their health delivery systems according to the expressed needs of populations at the village level. AFRO made

available to African countries manuals dealing with management of control programmes and community involvement.

133. The Committee heard statements by the National Coordinators from Côte d'Ivoire, Guinea and Mali. They referred to such issues as the reorganization of Primary Health Care systems to accommodate devolution activities and suggested that high-level Missions should visit their countries to promote devolution.

134. Looking to the future, members of the Committee commented on the feasibility of establishing, following the end of OCP operations, an Inter Country Facility whose structure, Terms of Reference, funding and institutional attachment could not be determined at this stage. The Facility, would in principle play a coordination, information dissemination and supporting role whenever so requested by the countries concerned.

135. The Committee had before it a paper outlining the structure and respective responsibilities of the various partners in the devolution process, prepared at the request of the Joint Programme Committee at its December 1992 session. The Committee endorsed the concepts outlined in the paper with the understanding that the Programme would adapt the presentation so as to make it more focused.

136. Mr Bruce Benton of the World Bank informed the Committee of an initiative recently undertaken by the Bank, in conformity with a recommendation of the Committee of Sponsoring Agencies, to offer to consider financing the implementation of devolution plans, where bilateral funding was not readily forthcoming. One reason why the Bank had taken this initiative was that socioeconomic development in onchocerciasis-free zones moved into the foreground with the success of OCP control operations and sustaining the achievements of OCP over the long-term had become a high priority. The Bank was supporting the strengthening of national health delivery systems in most of the OCP Participating Countries and devolution activities might be integrated within such systems through ongoing or new Bank-supported health projects. The Bank could consider financing devolution within such projects in cases where other sources of financing were not available. Letters had gone to all eleven countries from Mr Benton, as Chairman of the CSA, informing them of this recent development.

137. In summary, the Bank was promoting nationwide systems geared to improving the quality and accessibility of health delivery at the local level through strengthened district level health services. An important aspect was to ensure the continuing availability of essential generic drugs, and the introduction of cost-recovery. As regards devolution, an important element could be the strengthening of surveillance systems starting at the centre, then taking on the intermediary level for finally incorporating the periphery and defining the role of each level of the health service.

138. It was considered that fitting devolution activities into decentralized health care systems was a considerable challenge but it was felt that a good start had been made.

139. The Chairman expressed, on behalf of the Committee, his gratitude to Mr Benton for having brought members of the Committee and OCP staff up to date regarding this important initiative.

140. In conclusion, the Committee felt that important devolution issues had been raised, bringing the process closer to the operational level by addressing the overall health care structure, although solutions to all problems could not yet be found. EAC would closely follow progress in this field as the operational activities developed in parallel with resources and demands of the different levels of the health service.

10. REVIEW OF THE MACROFIL CHEMOTHERAPY PROJECT (formerly ONCHOCERCIASIS CHEMOTHERAPY PROJECT)

141. The current status regarding potential candidates for field-applicable macrofilaricides was summarized. Clinical data pertaining to the CGP 6140 compound (amocarzine) were being scrutinized by the company with a view to obtaining approval from the Swiss Regulatory Authority. At the same time, new synthetic routes were being sought to replace the one currently employed due to its unacceptability on environmental grounds. If the clinical data vouched for efficacy and safety, the drug should be further tested in African countries. In any case, a marketable compound could not be expected before mid-1995.

142. As regards CGI 18041, further preclinical studies were still required in view of a non-severe anaemia produced by the drug in dogs and rats, before proceeding to Phase I trials.

143. The third compound with good macrofilaricidal effect, UMF 078/289, was now in the preclinical toxicity and efficacy trial phase. The synthesis process had been patented in US and was being filed for patent in other countries by WHO. A potential manufacturer of the drug had been contacted, and was collaborating in the current development.

144. The Committee learned with satisfaction that clinical trials of potential macrofilaricides could now be conducted in Enugu, Nigeria, and Cameroon, in addition to the Onchocerciasis Chemotherapy Research Centre in Hohoe, Ghana. The last-named centre would also carry out studies on the possible macrofilaricidal action of high and repeated doses of ivermectin following the approval by the manufacturer of a revised research protocol.

145. It was further reported that Macrofil would participate in a TDR centralized compound holding and shipping facility with a computerized database for use in drug development in respect to filariasis, malaria and trypanosomiasis/leishmaniasis. As regards screening of test compounds, attempts to attract interest in *in vitro* cultivation of *Brugia malayi* had been unsuccessful, while *B. pahangi* in the dog had been established as a reliable *in vivo* model in addition to *Wuchereria kalimantani* in leaf monkey and *Onchocerca gibsoni* and *O. ochengi* in cattle.

146. With a view to developing a field test for detecting potentially lowered microfilarial susceptibility to ivermectin, progress had been made in identifying the genomic DNA involved in ivermectin resistance in *Caenorhabditis elegans* and attempts would be made to seek in *Onchocerca* the DNA sequence corresponding to that identified in *C. elegans* and *Haemonchus contortus*. The Macrofil Project had also funded work with the Rotterdam group to incorporate data on potential ivermectin resistance into the ONCHOSIM model.

147. On the organizational side the Committee was informed that a recent review had led to a restructuring of TDR resulting in the abolition of disease-specific programmes and, consequently, of the Filariasis Steering Committee. Within the new TDR structure, the Macrofil Project appeared together with the Product Development Unit.

148. The far-reaching strategic implication for all onchocerciasis endemic countries of having a field-applicable macrofilaricide available was emphasized. Although there had been good prospects of increasing the funds allocated to OCT (now Macrofil) a few years ago, and plans had been made accordingly, it was now evident that resources additional to those foreseen in the Plan of Operation for the 1992-1997 period were unlikely to be forthcoming.

* * *

149. The Committee therefore stressed the importance of establishing priorities and it was suggested that Ciba-Geigy should be urged to release the findings from the Latin American and West African trials in order that a decision could be taken on the importance to be attached to the CGP 6140 compound in the operational context of the OCP area.

150. It was explained that priority-setting determined by the anticipated availability of resources was an essential element in the management of the project and that prospective compounds were pruned from "bottom up". As regards amocarzine (CGP 6140), the impression was that the drug might, if registered by the Swiss Regulatory Authorities, make a contribution to onchocerciasis control, even if its use would be restricted to patients with confirmed parasites. This could apply in situations of limited control of recrudescence.

151. The Committee noted that an increasing number of target-determined compounds were made available to the project. A new development, encouraged by the Committee, was the attempt using the ONCHOSIM model to simulate the impact of a potential macrofilaricide using different values of such parameters as killing effect, coverage of treatment and its duration (see also paragraph 157 below).

152. In conclusion, the Committee endorsed the work programme of the project, stressed the importance of focussing on the most promising compounds and welcomed the increased collaboration with TDR.

11. REVIEW OF BIOSTATISTICS AND INFORMATION SYSTEMS ACTIVITIES

153. The determination of the risk involved in the cessation of larviciding within the Original Programme area and prospective evaluation in respect of detection and control of recrudescence remained priorities of the unit concerned (BIS).

154. This involved constant updating of ONCHOSIM parameters by continuously reviewing epidemiological data as well as the findings of studies on the impact of ivermectin on transmission. It was encouraging to observe that, confronted with results, ONCHOSIM continued to show a high degree of validity. When predictions did not fit with the findings the model allowed for formulations of hypotheses (see paragraph 156) to account for discrepancies.

155. In addition, the unit continued the analysis of ophthalmological data (see paragraph 111 above) and of the impact of migration on onchocercal transmission. Other important activities connected with OCP support to devolution were the training of nationals in the analysis of epidemiological data and the transfer of such data to national data banks. Follow-up of this training and the use by nationals of these tools were encouraged.

156. Recent predictions, based on ONCHOSIM simulations, concerning the impact of ivermectin distribution (alongside larviciding) in the Asubende area were brought to the attention of the Committee. After three annual treatments, the assumption had been that ivermectin eliminated practically all the microfilariae but without any effect one year after on the level of "productivity" of microfilariae. Now, after five annual treatments, updated simulations showed that although the adult worms became productive again during an average period of nine months, the level of productivity decreased by 33% after each treatment suggesting that ivermectin might also have a limited macrofilaricidal effect (see also paragraph 108 above). ONCHOSIM had already been updated to take into account these findings thus proving its high level of flexibility.

157. Simulations were also under way concerning the eventual impact of macrofilaricides at different levels of effectiveness and coverage.

* * *

158. The Committee noted with satisfaction that a Steering Committee on modelling had been established within the OCP secretariat.

159. The Expert Advisory Committee also noted the considerable contribution of ONCHOSIM to operational decision-making as well as its contribution to planning and programming within the Programme itself. A recent preliminary finding had been the prediction that combined larviciding and large-scale ivermectin distribution could reduce the period of control necessary to bring the human parasite reservoir to an insignificant level to less than fourteen years although further verification of this was required.

160. A suggestion was made that the BIS computer programme might be of use in other control activities, such as the Expanded Programme on Immunization to the benefit of both. This programme was currently developing a cost-analysis and surveillance programme for the use by nationals and the Committee was also informed that protected versions of the model using data from Ecuador with limited variables would become available for training and demonstration purposes.

161. The Programme Director took the opportunity of underlining the importance of ONCHOSIM in assisting in the strategic planning of the Programme.

12. IDENTIFICATION OF RESEARCH PRIORITIES

General

162. The Committee was impressed by the considerable progress made in the field of research and noted with satisfaction that studies supported by OCP or carried out by the Programme itself continued to be addressed for the sole purpose of enhancing the effectiveness of control operations and enforcing strategic planning of control.

163. The Committee reiterated its appreciation of the increasingly close collaboration with TDR to the benefit of both parties. OCP provided the testing ground for some of the TDR conducted research projects while the Programme made good use of the technical and scientific backup provided by TDR. Annex 3 lists the issues tackled by OCP in collaboration with TDR.

Research priorities

164. As had been the case during previous years, the Committee's recommendations regarding research priorities centered on the search for new larvicides or their improved formulations, the search for a macrofilaricide and the development of an immunodiagnostic test.

165. As regards vector control, the Committee endorsed the search for a new larvicide to be used in areas of resistance (or of risk of resistance), and selective enough for use in rivers where the discharge ranged between 15 and 70 m³/s (paragraph 69) Also, the improvement of *B.t.* H-14 formulations as well as the continuation of collaboration with the Pasteur Institute, Paris, in respect to recombinant strains of *B.t.* H-14 formulations remained matters of priority (paragraph 56).

166. With regard to the search for a macrofilaricide, the Committee endorsed further trials on CGP 6140 provided that preliminary findings and toxicological data were made available (paragraph 149); the Committee also recommended that research and development studies be continued on compound UMF 078 (paragraph 143) as well as on a possible macrofilaricidal activity if ivermectin were given in multiple and/or single high dosage regimens (paragraph 144).

167. In the field of diagnostics, the Committee recommended that further studies be made in the development of alternative diagnostic tools for epidemiological evaluations, including immunodiagnosis and PCR assay (paragraph 92).

Other research activities

168. The Committee in considering OCP operations at its current session noted and endorsed a series of operational research activities and studies carried out in conjunction with the routine work of the Programme or planned for implementation. These research subjects are brought together and listed below.

169. Epidemiological activities and treatment

- a. studies on ivermectin distribution: evaluation of efficacy of various delivery systems and cost efficiency (paragraph 106);
- b. migration studies in the areas still under control to assess the volume of infection due to migrants and in the oncho-freed areas to assess contribution of migrants to the risk of recrudescence (paragraph 81);
- c. development of surveillance systems for the detection of the appearance of parasite resistance to ivermectin (laboratory and *in vivo* studies) (paragraphs 79, 94 and 146);
- d. follow-up ophthalmic surveys to document the impact of ivermectin on the evolution of ocular lesions, employing objective methods such as photographic documentation and taking cognizance of the outcome of the OCP/TDR informal consultations schedules for 1993 (paragraph 111);
- e. continuation of field studies on the effect of thrice-yearly treatment of ivermectin on the transmission (paragraph 107).

170. Devolution

In collaboration with WHO/AFRO and the national authorities concerned, and considering the current situation as regards health delivery systems in the Participating Countries:

- a. identification of devolution activities that could be integrated into the primary health care services as well as the conditions required for the integration and monitoring, including the factors promoting or opposing such integration (paragraphs 121 and 125);
- b. determination of workable approaches to the promotion, implementation and evaluation of integration, including local financing of integrated activities in respect to the control of onchocerciasis (paragraph 129);

- c. feasibility study on use of village-based entomological surveillance in the context of devolution (paragraph 118).

171. Biostatistics and information systems

- a. improvement of the simulations made with the ONCHOSIM model by including the results obtained on the impact of a long-term distribution of ivermectin, the role of an immunodiagnostic test and the use of a macrofilaricide; the model would be used also to determine relevant entomological criteria which could guide epidemiological surveillance under devolution (paragraphs 118 and 156).
- b. verification of the possible impact of combined larviciding/ivermectin distribution on the duration of vector control (paragraph 159).

13. **OTHER MATTERS (if any)**

172. No issues were raised under this agenda item.

14. **DATE AND PLACE OF EAC.15**

173. The Committee decided to hold its next session at OCP headquarters from Monday 6 June through Friday 10 June 1994 preceded by a briefing session on Saturday 4 June.

15. **ADOPTION OF THE DRAFT REPORT**

174. A draft was adopted by the Committee with the understanding that modifications agreed upon during its consideration be incorporated for final approval by the Chairman.

16. **CLOSURE OF THE SESSION**

175. After the customary exchange of courtesies the Chairman declared the fourteenth session of the Expert Advisory Committee closed.