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DRACUNCULIASIS IN THE UNITED REPUBLIC OF CAMEROON I:

A PROPOSAL FOR A NATIONAL PLAN OF ACTION FOR DRACUNCULIASIS CONTROL AND ELIMINATION

July 7 - August 15, 1986

by

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CE-010

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ABBREVIATIONS USED IN THIS REPORT

CARE.....Corporative for American Relief Everywhere

CDS.....Community Development Service, Ministry of Agriculture

DPMPH.....Division of Preventive Medicine and Public Hygiene

GW.....Guinea Worm (*Dracunculus medinensis*)

GWD.....Guinea Worm Disease (Dracunculiasis)

IWSSD.....International Water Supply and Sanitation Decade

MOA.....Ministry of Agriculture

MOH.....Ministry of Health

NGO.....Non-Government Organization

NWC.....National Water Committee

OCEAC.....Organization de Coordination pour la Lutte contre les Endemies en Afrique Centrale

PMO.....Preventive Medical Officer (DPMPH)

PO.....Project Officer of the Plan of Action

POA.....Plan of Action

UNICEF.....United Nations International Children's Emergency Fund

URC.....United Republic of Cameroon

USAID.....United States Agency for International Development

WHO.....World Health Organization

1. INTRODUCTION

This document is a proposal for a national plan of action (POA) for the control and elimination of dracunculiasis in the United Republic of Cameroon (URC). It is the result of a consultant mission by an epidemiologist from the Centers for Disease Control, who visited the URC in July and August of 1986, at the request of the Cameroonian Ministry of Health (MOH) and USAID/Yaounde. This technical assistance was sponsored by the Vector Biology & Control Project under contract to the A.I.D. Office of Health, Bureau for Science and Technology. During the consultancy, background information on the subject of dracunculiasis in the URC, and Cameroonian institutions relevant to the POA, was assembled into a companion report: DRACUNCULIASIS IN THE UNITED REPUBLIC OF CAMEROON II: BACKGROUND/REFERENCE INFORMATION (Volume II). The detailed scope of work for the consultant is found in Annex 1 of this companion document.

1.1. DRACUNCULIASIS IN THE URC: Human dracunculiasis (guinea worm disease--GWD) should be considered as one of the important preventable health problems in northern Cameroon. It occurs in a patchy distribution in the Extreme North and North Provinces of the URC. There are unconfirmed reports of GWD in Adamaoua and South-West Provinces (Figures 1.1 and 1.2). The best described endemic area in the URC is in the division of Mayo Sava (Extreme North Province), where the infection prevalence reaches 45.4% in some villages; varying disability occurs in 20-40% of those afflicted. Control measures need to be instituted in the country. However, considerable improvement in surveillance systems is required to delimit the numbers of persons infected, the populations at risk, and the precise areas to target for control efforts.

1.2. THE STRATEGY FOR CONTROL AND ELIMINATION OF DRACUNCULIASIS: The International Drinking Water Supply and Sanitation Decade (IDWSSD) (1981-1990) is using the incidence of dracunculiasis as an indicator of the effectiveness of efforts to provide potable water.[1] The strategies for control of GWD have been established, and some endemic countries, notably India, have ambitious national programs underway.[2,3,4] The strategy endorsed by the 39th World Health Assembly in May 1986 includes: (1) enhanced surveillance to identify affected villages, (2) designation of these villages as priority for new sources of drinking water, or for chemical intermediate host (Cyclops) control, and (3) community health education programs to develop understanding of the GW life-cycle, personal prophylaxis, and prevention of contamination of drinking water. A key element in the global strategy to control GWD is the coordination, in each endemic country, of existing government and/or donor health, development, and water activities. A vital first step is the preparation of a national plan of action.[2]

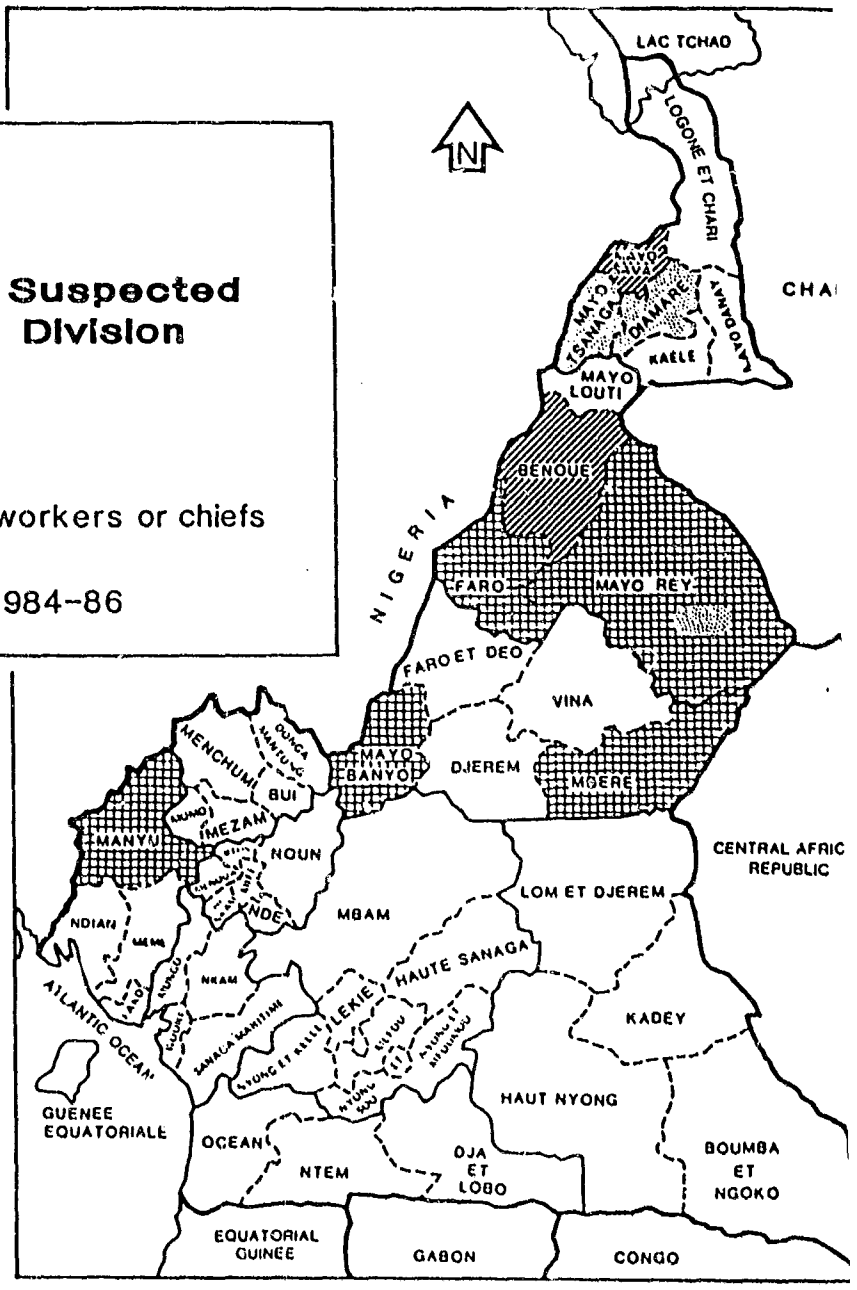
1.3. A NATIONAL PLAN OF ACTION (POA): The implementation and funding of a POA for dracunculiasis control and elimination should be considered a short-term investment which takes advantage of the special opportunity afforded by the IWSSD. Control of guinea worm disease is possible with the tools available, but will not be achieved without proper organization and management and a high degree of operational efficiency. A national POA should blend the available tools with the components and programs of government ministries. Important components of a national control or elimination program are the formal commitment of resources toward well-defined goals, an implementation schedule, and subsequent evaluation of the effort.

FIGURE 1.1

CAMEROON

DRACUNCULIASIS: Known and Suspected Geographical Distribution, by Division

- Transmission confirmed in 1986
- Unconfirmed anecdotal reports by health workers or chiefs
- Unconfirmed official surveillance reports, 1984-86



1.4. THE GOAL OF THE POA IN THE URC: The goal of the POA is to eliminate dracunculiasis from all recognized foci in the URC by 1993.

1.5. COORDINATION OF THE POA IN THE URC: A successful POA for GWD requires that two kinds of responsibility be delegated to government organizations involved with health delivery services and water provision. The first key element for success is the identification of the appropriate governmental institution(s) to assume responsibility for the implementation of a POA. Second, a body must be identified which can push the POA toward recognition as a high priority governmental decision. The degree of commitment (i.e., the legitimacy) of the national POA must be realized at the highest levels of numerous ministries with responsibilities for water supply. Demonstration of firm governmental commitment to the goal of the POA is also an important factor in attracting additional program funding by bilateral and international organizations.

1.5.1. The Ministry of Health: The MOH should be responsible for the coordination and programs of the POA. In turn, the organizational element in the MOH which will bear the major responsibility for the POA should be the Division of Preventive Medicine and Public Hygiene (DPMPH). POA Project Officers (POs) should be selected from DPMPH staff. The first responsibility of the POs should be to prepare the final version of the POA. Details of the responsibilities of the DPMPH are provided later in this document. In general, POs will periodically review passive and active surveillance information, undertake missions to suspected endemic areas, prepare reports, administer the funds, coordinate other involved government and NGO personnel, and plan and monitor the various control programs.

1.5.2. The Ministry of Agriculture: After the MOH, the Ministry of Agriculture (MOA) is the most important ministry to be involved in the POA effort. The MOA is responsible for provision of safe water supplies to rural populations. Within the MOA, the Community Development Service (CDS), which is usually involved in the selection of villages to receive such new water sources, should provide the DPMPH with operational cooperation. One PO should be designated from the MOA. In the proposed POA, communication must be developed between DPMPH and MOA Project Officers, local health personnel, and local CDS officials to provide the necessary coordination to identify and provide endemic villages with safe water.

1.5.3. The National Water Committee: The National Water Committee (NWC) is the third most significant governmental organization for the POA. Although still in its developmental stages, this committee provides a mechanism for infusing a new governmental policy on water through the relevant infrastructures and organizations. In addition to DPMPH (MOH) and CDS (MOA), government activities represented on the committee include: energy and water; mines and geology; program formulation; territorial management; hydrological research; rural engineering; meteorology; territorial administration; and breeding, fishing and industrial animals. Time in one or more meetings of this committee could be devoted to formal presentation and discussion of the International Guinea Worm Initiative, and to consideration of the final POA prepared by the DPMPH. The NWC should play an important leadership role in the public declaration and interministerial acceptance of the POA. Periodic reports on the progress toward the final goal of the POA (elimination of GWD from the URC) should be presented to this body by POs.

2. OVERVIEW OF THE PLAN OF ACTION

Elimination efforts for dracunculiasis in the URC should be addressed in two phases.

2.1. THE FIRST PHASE (Phase I: 1987-1990): The most important goals in Phase I are the acceptance of a POA, the completion of definitive national surveillance activities and the development of a pilot control program in Mayo Sava Divison, Extreme North Province.

2.1.1. A governmental resolution should be made that dracunculiasis control and elimination is necessary, particularly in the northern regions of the URC. This resolution should be accompanyed by the acceptance of a National Plan of Action (POA). The POA should establish a realistic timetable for accomplishing defined regional, national and international goals. It should designate POs from the MOH and MOA who will be responsible for the coordination of the POA. The National Water Committee will monitor progress of the POA.

2.1.2. During Phase I, surveillance efforts should be strengthened to delineate the extent of GWD by division, and if possible, district, throughout the URC. This should be accomplished by confirmation of case reports received through the passive surveillance system, through mail, telephone, telegraph, radio communications, or preferably, missions by Yaounde or local DPMPH personnel.

2.1.3. A pilot project for control and operational research, based on utilization of existing institutions should be initiated in the division of Mayo Sava. By the completion of Phase I, GWD should be eliminated from the area. The program should be designed to permit rigorous evaluation of control efforts. A training component should be provided to develop expertise among the POs in executing and evaluating control in other regions in the country determined to be endemic for GWD.

2.2. THE SECOND PHASE (Phase II: 1990-1993) of the POA should consist of an extension of control efforts in Mayo Sava to other areas with dracunculiasis.

2.2.1. A meeting should be held of health professionals and water engineering authorities from provinces and divisions with recognized GWD foci to report on the control principles of the Mayo Sava Project and to formulate control programs in other endemic localities throughout the URC.

2.2.2. New control activities appropriate for local conditions should be implemented in the remaining transmission sites in the URC.

2.2.3. Collaborative efforts should be developed with other endemic countries bordering the URC in order to prevent reintroduction of the infection.

3. SPECIFIC RECOMMENDATIONS FOR PHASE I (1987-1990)

Specific recommendations will be presented under three headings: administrative, surveillance and control.

3.1. ADMINISTRATIVE: Administrative responsibilities will be distibuted among the three important agencies involved in the POA.

3.1.1 NWC: Time should be devoted during NWC meetings to hear reports on GWD in Cameroon, and the international dracunculiasis initiative. The NWC should request the development of a formal POA by the MOH.

The POA accepted by the NWC should be sent to the President or legislature for ratification. The event should be publicized.

The NWC should promote the policy that priority for safe water sources be given to villages endemic for dracunculiasis.

The NWC should direct the MOA to provide the MOH with all necessary assistance during the implementation of the POA.

Progress should be periodically presented to this body.

3.1.2. MOH: Based on the request from the NWC, the Minister of Health should direct the DPMPH to prepare a draft POA for his approval. MOH Project Officers should be designated at this time. Meetings should be held to determine necessary operational and budgetary details. Additional outside consultation may be required during the preparation of the final POA.

When the POA is approved, efforts to secure funding for the project should begin.

3.1.3. MOA: The Minister of Agriculture would appoint a MOA staff member as PO. This individual should meet with MOH POs on a regular basis.

Principal MOA cooperation during Phase I will be in the Mayo Sava Division (See Section 4)

3.2 SURVEILLANCE: Surveillance responsibilities should be assumed by the DPMPH of the MOH. Surveillance should be strengthened throughout the country, and, in particular, in the North, Extreme North, Southwest and Adamaoua provinces.

3.2.1. Surveillance forms should be reviewed semiannually by DPMPH project officials. Computerized reports should not be used for these routine reviews.

3.2.2. OCEAC authorities should be notified of discrepancies noted between MOH surveillance reports and OCEAC computer file listings for dracunculiasis (See Volume II, Section 6.4.4).

3.2.3. Responsible authorities should be contacted to verify the validity of GWD cases reported from their area. Efforts should be immediately directed to validate case reports in 1985 and 1986 by the divisions of Mbere, Mayo Banyu, Manyu, Faro, and Mayo-Ray.

3.2.4. Efforts should be made to sensitize all provincial and divisional preventive medicine personnel and statistical staff of the dracunculiasis surveillance program. This may be accomplished by letters sent from the highest Ministry of Health levels. The letters should promote careful reviews of the dracunculiasis column on the surveillance forms at the divisional or provincial level, before they are forwarded to the Yaounde DPMPH service, in order to reduce overreporting errors which currently plague the surveillance system.

3.2.5. The DPMPH should mail questionnaires to the provinces of the Extreme North, North, Adamaoua, and Southwest. However, these should be much simpler in their demands than previous DPMPH mail surveys. The questionnaire should be only one page in length, and should address only the question of whether GWD does or does not occur in the department. One or two additional questions may be posed to an affirmative answer; i.e., in which divisions and districts does GWD occur, and are these imported cases. In an attempt to improve response rates (which have been very poor on past DPMPH mailed questionnaire surveys), numbers and origin of cases, and water source information, should not be addressed. An example of such a questionnaire is given in Annex 1.

3.3.6 Field visits by local DPMPH personnel or Yaounde POs are often the only way by which to confirm presence or absence of GWD in an area. During Phase I, these should be undertaken regularly to suspected endemic areas in the forementioned provinces. Two of the most important aspects of such missions should be to confirm the diagnosis and to determine if transmission is occurring in the area. These missions can be funded with monies which DPMPH has budgeted for investigations of transmissible diseases.

3.3. CONTROL: The Mayo Sava Project: During Phase I, a three year pilot control project should be undertaken in Mayo Sava (Extreme North Province) to determine the most effective strategies for collecting dracunculiasis intelligence and for effecting control in the division. The objective should be to eliminate the infection from the Mayo Sava Division. The estimated cost of such a pilot project is $150,000. An overview of methodology and budget of this pilot project is given in Section 4.

4. PROPOSAL FOR A PILOT CONTROL PROJECT IN MAYO SAVA

A three year pilot project for control and operational research should be initiated in Mayo Sava with the objective to eliminate GWD from the division by 1990. The project should utilize existing institutions (the preventive and the primary health care systems of the MOH; CDS, Genie Rural and Program d'Urgence of the MOA; and CARE). The impact of control programs applied to the plain (water provision and health education) and mountain transmission foci (temephos treatment and health education)* should be determined by analysis of data from community-based surveys. Ways to improve passive reporting of cases should be also considered. The program should develop expertise among MOH officials in executing and evaluating subsequent control efforts in other regions in the country. One of the Project Officers of the POA should be the Preventive Medical Officer (PMO) of Mayo Sava.

4.1 COMPONENTS: The project should have the following components (See Steps on flowchart in Figure 4.1):

4.1.1. Step 1: A simple active reconnaissance method to identify all infected villages should be developed and evaluated. This effort should include not only DPMPH personnel, but those in other health care delivery services in the area, especially those involved with CARE water supply projects and primary health care initiatives. The active surveillance system should be simply designed, with a basic objective to answer the question "does this village have cases of guinea worm?"

4.1.2 Step 2: Efforts should then be made to visit these suspected areas to confirm the presence of GWD transmission. These data will permit the Project Officers to identify and map all potentially endemic villages (Step 3). These villages will be called "priority villages."

4.1.3. Step 4: Collaboration between the Project Officers and local officials of the MOA at this point is of utmost importance for exchange of information. To promote necessary cooperation and coordination, meetings with water supply engineers, local government officials, community organizers, and health personnel should be held to discuss the possibility of providing safe water to "priority villages."

4.1.4. Step 5: The CDS should provide hydrological evaluations for the priority (endemic) villages which are located in an area which is accessible to well drilling equipment. If studies show that ground water is available in these sites, the affected villages will then need priority targeting for well drilling.

4.1.5. Step 6: Project (DPMPH) officers will need to complete a preliminary (baseline) survey in all, or a sample of, targeted villages (Annex 2).

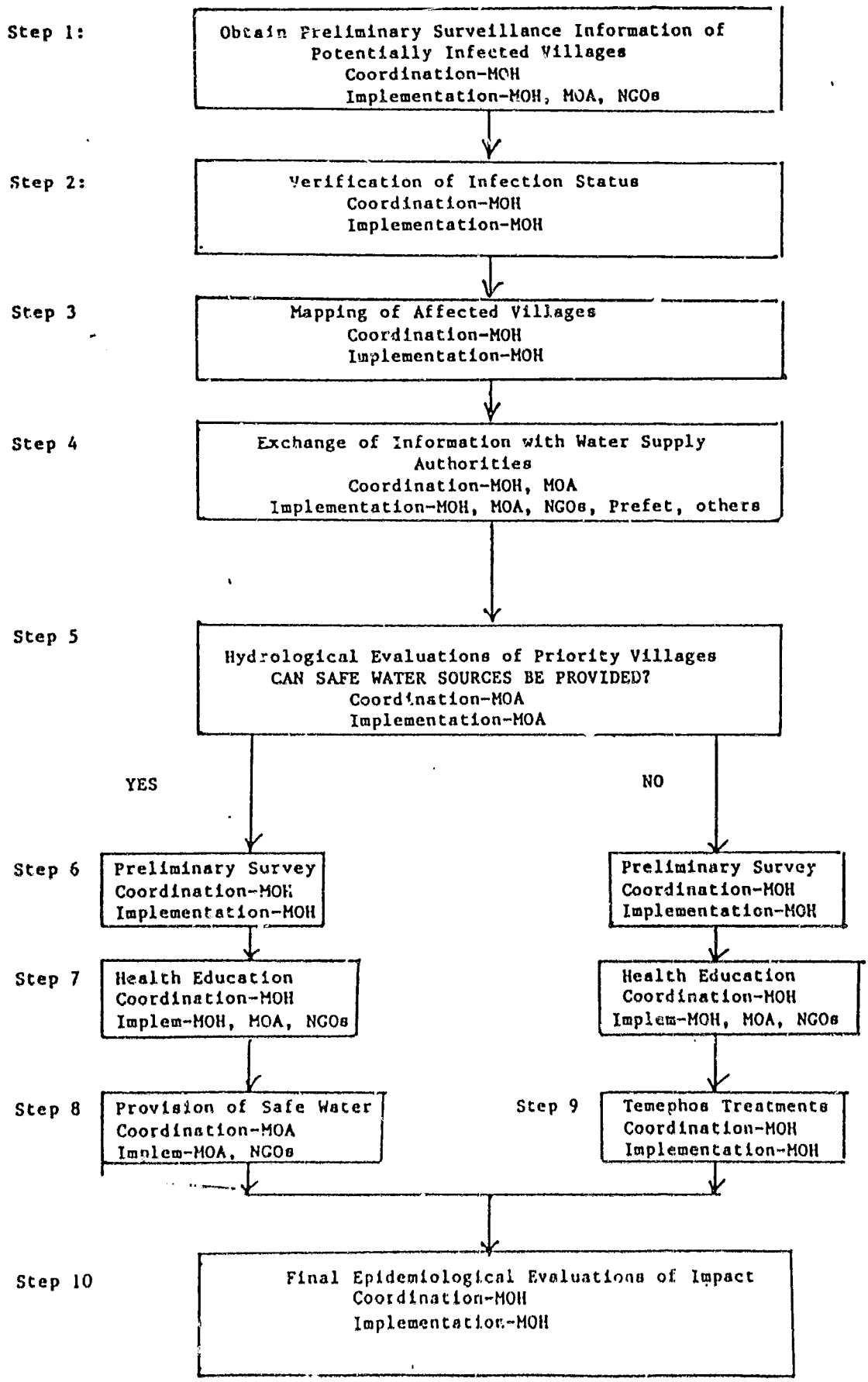
4.1.6. Step 7: Health education efforts should be initiated (Section 5.2).

*The reader is referred to Volume II, Section 7 of this report for backgound information on Mayo Sava.

Figure 4.1

FLOWCHART

Strategy for the Mayo Sava Project



4.1.7. Step 8: A protected water supply should be provided to targeted villages by currently financed water projects operating in the Mayo Sava area.

4.1.8. Step 9: A program of seasonal applications of the larvacide temephos (ABATETM*) should be directed at the water sources of those villages which cannot be supplied with protected wells. This would reduce intermediate host populations (Cyclops) in local water sources, thus affecting GW transmission. Temephos should be used only in villages determined by project officials to be endemic for GWD. It should be used in a safe and recommended manner (Annex 3). Doses sufficient to achieve 1 ppm concentration should be applied to water sources every month for the four month transmission season (July-October). Temephos should be purchased, stored, and distributed under the auspices of project authorities.

Since 1983 Professor Christian Ripert of the University of Bordeaux has directed a similar intermediate host control program in the Mandara Mountains. French medical students and various missionary groups in the Mora vicinity have participated. The program has developed important maps and village relationships which would be invaluable to the proposed pilot project in Mayo Sava. The University of Bordeaux and these missionaries should be encouraged to participate in this new effort.

4.1.9. DPMPH officials have undertaken operational research to determine the efficacy of the temephos strategy in a small area near Mayo Plata in Mayo Sava (Volume II, Annex 5). Yaounde DPMPH personnel should visit this area in July or August 1987, in order to evaluate this effort.

4.1.10. Step 10: One and two years after intervention, project authorities will complete impact surveys in all, or a sample of, targeted villages to determine effect of the control measure on GWD endemicity. Basic methodology for such evaluations is described (Annexes 2 and 4).

4.2. HEALTH EDUCATION: Health education is a key component of the Mayo Sava Project. A course should be developed which will utilize village MOH health workers in the various primary health care posts, community development centers and agricultural projects. CARE and other NGO health workers should be encouraged and trained to incorporate a section on GWD into existing programs. Short courses should be designed for villagers which describe the life cycle of the parasite, especially those aspects which involve human behavior, such as contamination of water sources and the contraction of infection by drinking unfiltered water. Personal prophylactic measures should be taught and encouraged by the provision of 100 mesch monofilament nylon filters to the villagers. Health education approaches should be adjusted to

*Use of trade names and commercial sources is for identification only and does not constitute endorsements by the Public Health Service or the U.S. Department of Health and Human Services.

the local GWD control strategy (i.e., provision of protected wells to villages on the plain vs. treatment of open water sources in the mountains with temephos). When temephos is used, its purpose must be carefully described to villagers. More information on the agenda of health education programs is presented (Annex 4).

4.3 REPORT: A comprehensive report should be prepared from the Mayo Sava Project results by the POs. The report should describe in detail: (1) active surveillance methods which utilize the primary health care system; (2) rapid epidemiological assessment for the impact of control measures; (3) the use of surveillance information to guide well drilling operations; (4) the impact of improving water quality on GWD endemicity; (5) the impact of temephos on GWD endemicity; and (6) health education methods, acceptance and impact.

4.3.1 From this report and pre-existing documents and data collection forms, an official MOH manual should be prepared detailing operations for GWD control at the primary health care level.

4.4. BUDGET: The estimated cost of the pilot project (excluding costs of water provision) is $60,000 in the first year, and $45,000 for each of the following years (total cost $150,000). Government authorities may chose to finance the project on their own, or may wish to acquire some or all funding from bilateral or private organizations, particularly if consultation or scientific research are to be included in the project. Estimated costs (in U.S. dollars) for important budget items are considered below:

Transport: ($25,000/year 1) ($10,000/year 2&3)	full-time project vehicle (all terrain), gasoline, maintainance costs.
Project instruments: ($5,000/year)	data management materials, survey forms, health education materials for villagers and project workers, maps, camping equipment, nylon filters, items for temephos administration (measuring tapes, buckets, gloves, etc.--Annexes 3,4, and 6).
Personnel: ($20,000/year)	One full time DPMPH health assistant located in Mayo Sava and supervised by the Mayo Sava PMO. Other part-time personnel (health educators, surveyors, water treatment workers during the transmission season, etc.) will be required.
Chemicals/Medicines ($5,000/year)	Temephos [50% emulsifiable concentrate (EC)]*; bandages, tetanus toxoid, antiseptics, aspirin, chloroquine, vitamins, antibiotics (for treatment of GW lesions and other commonly encountered conditions in the villages).
Travel and Per Diem: ($5,000/year)	For field workers and translators; for travel by POs between Mayo Sava and Mora (two to three trips/person/year).
Outside Consultant: (optional)	Airfare and 45 days WHO per diem/year

A model budget, suggested components of health education curricula, potential funding sources for the Mayo Sava Project, and a model outline for project proposals are provided in Annex 4.

*Temephos may be purchased from Monsieur Scae Jermanuad, 74 Bd de la Liberte', BP 2834, Douala, Cameroon. The chemical comes in 10 liter barrels at a cost of $25.00 liter.

5. SPECIFIC RECOMMENDATIONS FOR PHASE II (1990-1993)

5.1. ADMINISTRATIVE

5.1.1. Professional Meeting: During the initiation of Phase II of the POA, a meeting of health professionals and water engineering authorities should take place under the auspices and budget of the NWC (or the Ministry of Mines and Water). The 3 day meeting should be convened in one of the northern cities (Maroua, Garoua or Ngoundere). The meeting should be coordinated by the MOH (and MOA). Representatives should include health, engineering and agriculture officials, multilateral agencies involved with water supply, and other interested parties from all provinces and involved divisions where Phase I surveillance has confirmed GW transmission. The first day should be used to give background information on dracunculiasis and to present a report on the Mayo Sava Project. Strategies applicable to remaining endemic areas should be detailed at work sessions held during the remaining 2 days of the meeting. Each affected division will design an individualized control program, along with a proposed budget and estimated personnel requirement. A report of the meeting should be presented to the NWC.

5.1.2. During the operational stages of Phase II, POs will: (1) assist in developing the protocols of the various control programs; (2) monitor the various programs; (3) seek (with the assistance of the NWC) additional financial support; (4) acquire and distribute temephos, and (5) reproduce and distribute educational materials. These officials will report periodically to the National Water Committee.

5.1.3. MOH authorities should initiate communication with Nigerian MOH officials to coordinate potential control efforts along mutual borders (Figure 5.1).[5] Contacts with Chad and the Central African Republic would also be desireable, although little is known of the epidemiology of dracunculiasis in these countries.

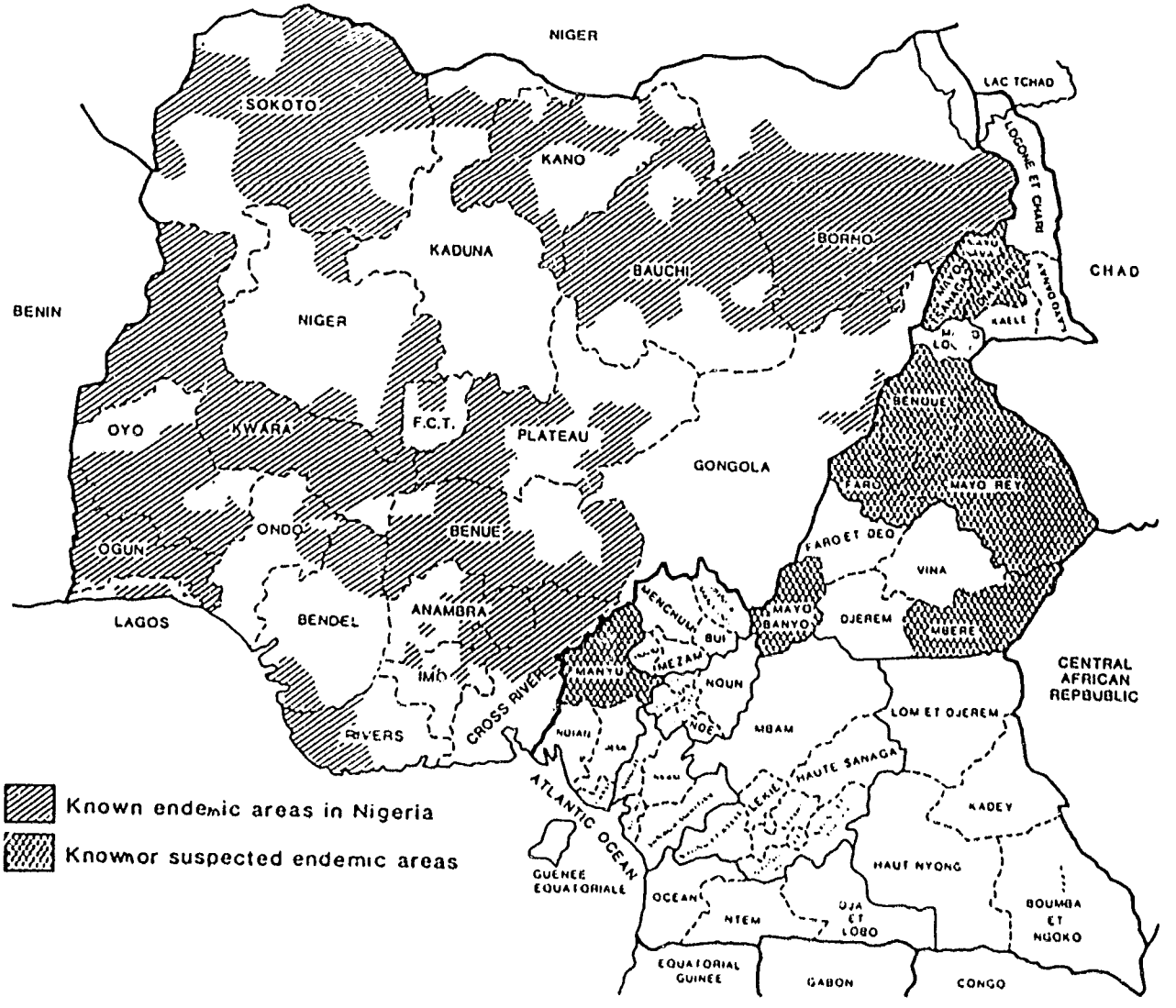
5.1.2. Criteria will be developed which, when fulfilled, will be used to declare dracunculiasis eliminated in Cameroon. The target date for elimination will be 1993.

5.2. SURVEILLANCE: These activities will continue on national and local levels as previously described (Section 3.2).

5.3. CONTROL: Each affected division will implement an individualized control program. These programs should include certain essential components: surveillance, role of the primary health care system; coordination between MOH and water supply authorities for provision of wells to endemic villages; institution of health education programs; and periodic evaluation of efforts. Temephos may be used when protected water sources cannot be provided.

FIGURE 5.1

DRACUNCULIASIS: Known and Suspected Distribution in Cameroon, Compared with Endemic Areas in Neighboring Nigeria (based on WHO: Wkly Epidem Rec, No.34, 23 August 1985, p. 264)



MAILED QUESTIONNAIRE SURVEYS

One means of surveillance for dracunculiasis is the health worker-health facility survey, which is achieved by mailing simple questionnaires to provincial or district health officials. The questionnaires may also be sent to private physicians, nurses, midwives, and other health workers outside of the government system. Mailed questionnaire surveys are an extremely important means of rapidly establishing a disease distribution baseline before dracunculiasis becomes officially reportable. To maintain good response rates, the surveyors should send preparatory and follow-up notices, and send questionnaires which require little time and effort to complete. Some examples follow. Mailed questionnaire surveys have been used in India, Benin, Ghana and Nigeria (Hopkins DR. In: Bourne PG, ed. Water and sanitation: economic and sociological perspectives. New York: Academic Press, 1984). In India, a 1979 survey yielded reports that an estimated 1.8 million Indians lived in affected areas or were otherwise at risk of dracunculiasis (Centers for Disease Control. MMWR 1981; 44:549).

ANNEX 1

DAT
MINISTRY OF PUBLIC HEALTH

REPUBLIC OF CAMEROON
peace-work-fatherland

No ____/LC/MSP/SG/DMPHP/DAMPHP/SEP/2.

CIRCULAR LETTER

The MINISTER

To:

- All Provincial Delegates of Health
- All Chiefs of SPMPHP
- All Chiefs of SDMPR

Subject: Dracunculiasis Surveillance.

In 1984, the importance of the disease dracunculiasis (guinea worm) was brought to your attention through letters and a questionaire. At that time, I asked that you include the surveillance of this disease among your health activities especially primary health care, planned and ongoing water provision and sanitation projects in your areas.

To identify endemic regions as well as potential transmission sites, it is hereby requested that you fill out the enclosed modified questionaire and send it back to the Direction of Preventive Medicine and Public Hygiene. If there have not been any cases reported in your area, indicate this on the questionaire and complete the other items as much as possible. This will enable us to determine the appropriate control measures necessary at the national level.

YAOUNDE, THE

ANNEX 1

EXAMPLES OF MAILED QUESTIONNAIRE SURVEYS

DATE_____

Name:_____
Title:_____
District:_____
Division:_____
Province:_____

Signature and seal below

1. Does Dracunculiasis (Guinea Worm Disease, Ver du Guinee') occur in your area? _____(Answer Yes, No, Unknown)

If the answer to question 1 is yes, continue. If the answer is no or unknown, you are finished. Please sign and stamp the form and return it to the Division of Preventive Medicine and Public Hygiene, Ministry of Health, Yaounde.

2. Is the infection transmitted (acquired) in your area, or are these imported cases?_____(Answer Yes, No, Unknown)

3. Is the infection common in your area?_____(Answer Yes, No, Unknown)

4. Please record any addition information your might have on this disease as it occurs in your area (such as names of endemic villages, estimated population at risk, estimated numbers of cases which occur each year, time of year cases occur):

QUESTIONNAIRE SURVEY FROM NIGERIA

Ref: No. HSMB/EVG/173/VolVII/416
Health Services Management Board
State Epidemiological Unit
P.M.B 2061
Yola

7th December, 1983.

The Secretaries
All Local Government Areas
Gongola State

The Medical Offices in charge
All Hospitals

SURVEY OF GUINEA WORM IN GONGOLA STATE

I forward herewith the forms of the University of Ibadan - Department of Prevention and Social Medicine to get the above information.

Please fill-in the forms and return them to this Unit immediately.

Thank you for your co-operation.

Dr.(Mrs) Zofia Gryzel
Senior Consultant Epidemiologist

/81

SURVEY OF GUINEA WORM IN GONGOLA STATE

1. Does guinea worm occur or have you been told of its occurrence in your area?

   Yes

   No

2. If yes, how prevalent is the disease? (i.e. approximately how many cases in your opinion occurs yearly).

3. What months of the year do most cases of guineaworm present? .....

4. What District/s are involved?

5. Name of villages infected with their population.

6. Please give any other information on the disease in your area that you think may be helpful (i.e. water supply, sanitation and other facilities).

.....

SAMPLE COVER LETTER

No. 10-32/79-NICD (PRC)
Government of India
Directorate General of Health Services,
Nirman Bhawan, New Delhi
Dated the 24th October, 1979

To: Directors of Medical and Health Services of all States and Union Territories

Subject: Guinea Worm Disease: Delimitation of Endemic Areas in the Country

Sir:

It is proposed to define the extent of the present problem of guinea worm disease in different states of the country in order to consider control measures at the national level. Requisite number of the questionnaire prepared for the purpose are enclosed herewith. It is requested that one copy be sent to the Senior Medical Officers in charge of each district with a request to transmit the duly completed questionnaire to Dr. C. K. Rao, Deputy Director, National Institute of Communicable Diseases, 22-Sham Nath Marg, Delhi-110054 who has been asked to prepare a report for the country. They may please be directed to send NIL reports also.

Kindly acknowledge the receipt of this letter.

Yours faithfully,

(B. Sankaran)
Director General of
Health Services

FIGURE 8 Continued.

State_____ District_____

1. Is the disease reported from any part of the district? If yes*:

(a)

Name of affected block	Population of affected block	Number of villages affected	Population of affected villages	Cases in: 1978	1977

(b) Year of first report of the disease in the district and the source of information:

(c) Nature of source of drinking water in the affected blocks or villages: tanks/step wells/draw wells

2. Organized control measures undertaken against guinea worm disease (if no organized measures taken, please say so)

Name of affected blocks	Year of commencement	Nature of measures

*If information is not available, please leave the column blank.

Date_____ Name of the District Medical and Health Officer/Chief Medical Officer

_____

Send to: Dr. C. K. Rao
Deputy Director
National Institute of Communicable Diseases
22-Sham Nath Marg, Delhi, 110054, India.

Copy to: Director of Health Services of the States

FIGURE 8 Sample questionnaire and cover letter to be prepared by national public health authorities and sent to state and district health officials.

ACTIVE CASE DETECTION AND EXAMPLES OF COMMUNITY BASED SURVEYS

Active case detection systems yield the most complete and reliable information about the distribution and intensity of dracunculiasis transmission. However, they are expensive, and require trained and well-supervised personnel with a means of transport. Two kinds of active case detection systems have been developed: 1) active case surveys, in which statistical sampling techniques are used to select villages to be visited by the survey teams; and 2) active case searches, in which all potentially affected villages are visited in a comprehensive effort to detect any and all cases. An active case search is the only way to confirm the absence of the infection in an area. The Indian Guinea Worm Eradication Programme routinely conducts active searches for dracunculiasis. From a few simple questions which took only a few minutes to ask in each village, some 5.9 million persons were found to be at risk of infection in 1981. At the next stage of surveillance in 1982, workers visited affected villages to count cases; they found almost 43,000 victims. In contrast, fewer than 5,500 cases were passively reported for India in 1981.

In Mayo Sava, preliminary reconnaissance for endemic villages for dracunculiasis can be carried out by questioning local chiefs using pictures and local names for dracunculiasis. (Questionnaire 1). If the population or area to be covered is large or if the active case system is to be linked with other projects, only the most necessary information, which can be obtained with the least amount of time and effort, should be requested. The effort should seek to confirm only the presence and geographical extent of disease transmission. As long as the questions are kept to the minimum, they should not interfere with objectives of health or development personnel working in unrelated fields. Reconnaisance information can also be obtained from people representing a large surrounding geographic area such as at markets, roadside gatherings, etc.

Once a village is selected for control measures, a house-to-house survey can be undertaken, with all households, or a sample of households, in the village being visited. Attempts should be made to have as many people present in the household as possible during the survey. Questions in the household survey (Questionnaire 2) will be addressed to the adults of the household, and usually directly to the designated head of the household. Wives will be referred to when necessary. Translators must be used who are familiar with the local terminology for dracunculiasis and who have also been familiarized with the nature of the questions being asked before the survey begins.

Family members who regularly live in another village must not be included. Questions must be applied to all members of the household, with parents answering for young children.

Each village and houshold will be assigned a unique number on the data collection form. If practical, the village can be mapped schematically. After completion of the form the survey team will move on to the next household unit in the sampling scheme.

These villages will be questioned repeatedly one and two years after control has been instituted.

QUESTIONNAIRE I

Suggested Protocol: PRELIMINARY DATA COLLECTION ON DRACUNCULIASIS

_____ (1-5)

name of surveyor: _____ (6-15)

DATE OF VISIT OR SURVEY: _____ day (16-17) _____ month (18-19) 19____ year (20-21)

NAME OF VILLAGE: _____ (22-37) DISTRICT: _____ (38-53)

DEPARTMENT: _____ (54-69) STATE/PROVINCE: _____ (70-85)

COUNTRY: _____ (86-90)

1. What is the estimated population of this village? |__| |__|. |__| |__| |__| (91-95)

2. Has dracunculiasis (Guinea worm disease/ver de Guinee/filaire de Medine) occurred in people living in this village in the last 12 months?

   |__|9 Do not know, unknown

   |__|2 No (96)

   |__|1 Yes. If yes,

   3. how many of the villagers were reported to have had this infection in the last 12 months?

      Number of infected persons: |__|. |__| |__| |__| (97-100)

      |__|9 Do not know, unknown (101)

   4. do any of the persons in the village have worms visible or emerging from them today?

      |__|9 Do not know, unknown

      |__|2 No (102)

      |__|1 Yes. If yes,

      5. how many persons with visible worms did you see today?

         Number seen: |__| |__| |__| (103-105)

         |__|9 Do not know, unknown (106)

QUESTIONNAIRE 2

(Column)

1. Person number (begin new numbers for each household) ___ ___ (1-2)

2. Age estimation ____ (3)

   0-4--(A) 5-9--(B) 10-14--(C) 15-19--(D)

   20-39--(E) >39--(F)

3. Sex _____ (4)

   1 = Male 2=Female

4. Do you have guinea worm now? Show me the worms or the active ulcerations. (Record number of active worms. If none, write 0 in the box.)

   ____ (5)

5. Have you had any worms emerge during the preceeding 12 months? How many? (Mark number, 00=no infection)

   ___ ___ (6-7)

6. Have you ever had guinea worm in your life? ____ (8)

   N = No Y =Yes

QUESTIONNAIRE 2 (cont.)

(Column)

7. Where do you get your drinking water in the dry season?

(Codes must be developed for the village(s) in question)

Least used water source _____ (9)

Middle used water source _____ (10)

Most used water source _____ (11)

8. Where do you get your drinking water in the wet season?

(Codes must be developed for the village(s) in question)

Least used water source _____ (12)

Middle used water source _____ (13)

Most used water source _____ (14)

9. Record household number ___ ___ ___ (15-17)

10. Record TOTAL NUMBER of people REPORTED to live in house. __ __ (18-19)

11. Record whether person was actually interviewed and examined.

Y=seen N=not seen ____ (20)

12. Village code ____ (21)

13. Person Code ___ ___ ___ ___ (22-25)

14. Kind of Intervention ___ (26)

1 = Water Supply 2 = Temephos

Note on the application of temephos 50% EC under the GUINEAWORM ERADICATION PROGRAMME

Division of Helminthology,
National Institute of Communicable Diseases
22-Sham Nath Marg, Delhi-110054.

1. Introduction :

Guineaworm disease is transmitted by the consumption of water from open sources, like step wells, ponds and small tanks, containing the appropriate vector cyclops species harbouring infective larval stages of *Dracunculus medinensis*. The provision of protected water supply is the most effective long term measure for the eradication of guineaworm disease. The Indian Guineaworm Eradication Programme envisages close collaboration with central and state public health environmental engineering organisations (CPHEEO/SPHEEO) who provide safe water supplies to the guineaworm affected villages on a priority basis. However, in view of the time bound nature of the programme, provision of water supplies alone cannot achieve the eradication goal by the targeted date. Other components have also been included in the eradication strategy. Health education to promote personal prophylaxis, continued and effective surveillance and chemical treatment of unsafe water sources and treatment of cases, constitute the eradication strategy.

Several chemical agents like lime, potassium permaganate, bleaching powder have been used in the past for chemical control of cyclops. These methods are either too costly, or the chemical agents employed have a short residual action against the cyclops. Of the synthetic insecticides many of the organochlorines and organophosphates are highly effective cyclopsicides. However, temephos is the safest, has long residual action, and is comparatively economical to use against the vectors of dracunculiasis It is used extensively for the control of other vector–borne diseases including onchocerciasis, filariasis, dengue fever, and malaria. As a cyclopsicide its 1% or 2% sand granule formulations have been extensively evaluated and found to be safe and effective in India and African countries.

Under the guineaworm eradication programme, it was originally planned to use the 2 per cent sandgranule formulation. The directions for its use are given in the operational manual. As sand granules formulation is not available at present within

the country and it is uneconomical to import the formulation, the National Institute of Communicable Diseases (NICD) evaluated the 50% emulsiflable concentrate (EC) as a cyclopsicide at 1 ppm dosage and found it to be effective, safe to handle and acceptable to the community. The Task Force constituted by the Govt. of India for the eradication of guineaworm decided to use 50% EC of temephos in place of 2% sand granule under the guineaworm eradication programme.

This note summarises the guidelines for the use of temephos 50% EC under the guineaworm eradication programme.

2. Mapping of the unsafe water sources.

It must be emphasised at the outset, that the chemical treatment of unsafe water sources is a supplementary measure in the eradication strategy, Only those villages with guineaworm disease in 1983 and 1984 are targeted for the chemical treatment in all the affected districts. Before starting the temphos application the unsafe water sources in each affected village should be identified, plotted on a sketch map and made available to the village health guides and the PHC workers. Necessary training would be imparted to village health guides (VHG) and MPWs on the types of water sources to be treated, calculation of dosage, for each of the treatable water sources within his area, methods and time and date of application. It would be advisable for the supervisors like Sanitary inspectors, Block Extension Educator, Health Visitor (BEE/HV) to be present at the time of application. The first round may be planned in such a manner that the treatment of unsafe water sources in eligible villages is completed within 10 days. The schedule of PHC workers must be prepared before hand. The PHC worker must clearly understand the distinction between the safe and unsafe water sources. It is not uncommon to confuse the draw well with the step well. Only those step wells are to be treated with temephos which are in vicinity of the affected villages or hamlets and are used by the majority of the community for consuming water As an example it may be mentioned that in the padra Panchayat of Dungarpur district, there are more than 85 step

wells used for irrigation primarily but some time used by thirsty labourers for drinking water. Only 10 step wells are located in the vicinity of the villages and hamlets of this panchayat and are resorted to for drawing water for drinking purpose. Although by this all the transmission sites may not be covered, the majority would however be and economy would be exercised in the consumption of temephos.

3. Dosage calculation :

Compared to the 1% or 2% sand granule formulation of temephos, very small quantities of the 50% EC are required to achieve the recommended dosage of 1 ppm. As a simple rule the PHC worker may remember that only 2 mls of temephos 50% EC are required for application in 1 m^3 or 1000 litres of water. Excess amounts may result in untoward effects to the inhabitants, the operators or loss of nontarget organisms and thus diminish the acceptability of temephos and the cyclopsicidal coverage. Proper calculation of the dosage is a very important prerequisite. Examples to calculate the 1 ppm, dosage in respect of 2% sand granules are given in the operational manual. The exercise is repeated here in case of 50% EC.

Example 1 Rectangular step well.

A well measuring four meters in length, two meters in width and two meters deep will contain 4 (length) × 2 (width) × 2 (depth) = 16 cubic meters of water or 16,000 litres. The requirement for achieving 1 ppm dosage is 16 gms of temephos which are roughly contained in 32 mls of 50% EC.

Example II Round step well :

A round step well measuring three meters in diameter and having 2.5 meters depth, the volume of the water may be calculated by using the formula $\pi r^2 h$, where 'r' is the radius, 'h' the depth. For easier calculation the value of π (22/7) may be taken as 3.1. Thus the volume of water may be $3.1 \times 1.5 \times 1.5 \times 2.5 =$ 17.4375 cubic meters. The requirement of 50% EC would be about 35 mls.

For uneven depths of water the mean depth may be taken for calculating the volume of water. Similarly the volume for irregularly shaped breeding places may be calculated first by calculating the surface area, which may then be multiplied by the mean depth.

4. Frequency of application :

Frequency of application is determined by the length of the transmission season which in turn depends upon the interaction of the parasite/vector system with determining ecological factors. As per available guineaworm case search data, peak incidence is encountered in the summer months, with some transmission also taking place in the post monsoon season. The first application may be started in February/March, and then repeated twice during the dry season, at an interval of six weeks. Another application may be given in the 2nd-3rd week of September to prevent post monsoon transmission of the disease. However, local conditions must be taken into account and the frequency of applications should not exceed four in a year.

5. Community participation :

For the success of any vector control programme, the willing cooperation of the community is of prime importance [redacted] as it ensures maximum coverage of the targeted breeding places. The village leaders and important members of the community must know before hand the purpose of temephos application. The village health guides/multipurpose workers/ supervisors should always remember the following for informing the community :-

i) The application of temephos is intended to rid the community of guineaworm disease. A vial containing cyclops shown to villagers often produces salutary, psychological effect and would increase the acceptability of the cyclopsicide.

(ii) A slightly unpleasant odour due to temephos EC application persists for a couple of hours but it is not worst than the one produced by superchlorination to which the villagers are often used.

(iii) The colour produced by the mixing of EC with water persists for only few hours at the most. On the day of the application the villagers may be advised to draw their water before the application commences, so as to avoid inconvenience. This the villagers would normally themselves do.

(iv) Very small quantities of the chemical are being used.

(v) It is one of the safest chemical agents known to control the guineaworm vectors and would not produce any harmful effects on fish or other animals.

6. Equipment :

In view of the short term nature of the operations, no larviciding equipment is intended to be used that could enhance the cost and would require additional training and manpower. As temephos has an outstanding safety record when properly used, the emulsifiable concentrate can be applied by hand. For this the emulsion may be mixed with 5–10 litres of water drawn from the step well and after thorough mixing uniformly poured over the step well with a plastic mug. Thus only the following equipment would be needed. Most of the items can be borrowed locally.

i) A plastic bucket (10 litre capacity), for preparing the emulsion.

ii) A plastic mug for pouring the emulsion.

iii) A 250 ml vial with graduation for every 25 ml's for transporting temephos to the water source.

iv) A small quantity of coloured chalk (Gheru) for recording the date of each application on the step well.

v) A rope for measuring the depth of water and measuring tape.

vi) A cake of soap for washing hands after each application.

7. Supervision.

The overall responsibility of the operations, vests with the district health officer and at the PHC level medical officers of the PHCs. For concurrent supervision of the chemical treatment besides the district officers and PHC medical officers PMA/Health Educators, Block Extension Educators & Sanitary Inspectors may also be employed. After dividing the whole area into the number of supervision sectors, each PMA/etc. may be alloted a certain number of sectors for concurrent supervision. Officers from the NICD and the state headquarters would also be involved in the supervision of temephos application during their visits to the villages.

The supervisors should observe the followings in particular :

a) Whether all the unsafe water sources are recorded and listed.

b) The volume of water has been calculated correctly.

c) No excess amount of the temephos has been applied.

d) Date of each application is recorded on the step well.

e) Whether reports are properly maintained and communicated.

8. Reporting :

For maintenance of proper records and to facilitate future operation and concurrent evaluation the coverage of the breeding places and consumption of temephos during each round of

application should be compiled at the PHC and sent to the DHO. The district may compile the number of water sources so treated PHC-wise and send to the State. The state would send the district-wise report to the NICD. Time of submission by the PHC and transmission to the NICD should not exceed 2 weeks. The proforma as per annexure may be utilized at the PHC, district & state level.

9. Training :

Training in the application of temephos is to be provided at three levels, the state, district and PHC. At the state level district health officers would be trained while at the district level the PHC medical officers may be trained. The training of the PHC workers is the most important component which should be arranged at every PHC and district staff should assist. The training of the PHC workers must include the following components.

a) Correct calculation of the water volume and the correct dosage. A field demonstration, should be arranged & each worker taught the dose calculation procedure.

b) Enlisting the cooperation of the community.

c) The application procedure.

d) Briefing on the safety measures.

10. Safety Precautions.

Temephos is one of the safest organophosphorus compounds. Its acute dermal and oral toxicities are extremely low. It is classified by the WHO among the few pesticides which are unlikely to pose acute hazard in normal use. When administered to volunteers at 64 mg/man/day for thirty days it produced no detectable changes in the plasma or red blood cell cholinesterase activity or any other ill effects. In a study carried out over a

period of 19 months in Cerro – Gandia, Puerto Rico for control of *A. aegypti*, careful medical surveillance failed to reveal any illness or significant side effects attributable to addition of temephos in drinking water. However as concentrated form of temephos will be used some precautions are necessary to avoid exposure of workers involved in spraying and to avoid accidental poisoning.

1. The concentrate must be kept out of reach of children and foodstuff.
2. The persons handling the insecticide should wash their hands thoroughly every time they handle the insecticide.
3. No vial containing the concentrate should be kept unlabelled and left in the village.
4. There should be sufficient stock of atrophine at the PHC to take care of accidental poisoning.
5. The insecticides must be stored in secure, cool & well ventilated places to avoid degradation due to excessive heat.
6. The empty cans of temephos must not be reused. They may be washed with 5% caustic potash and suitably destroyed.
7. Adequate washing facilities such as soap be available.
8. The first consignment must be used first, in view of the short self life.
9. While transporting the insecticide from the district to periphery, it should be ensured that no leakages take place and they are kept away from food articles.

Annexure

Temephos Consumption and Coverage of breeding places

State District PHC

Date of temephos application: Ist round, 2nd round, 3rd round, 4th round

No. of PHC workers employed

No. of affected villages		No. of breeding places		Total volume of water		Quantity of temephos consumed	%coverage of breeding Places	Reasons for refusals	Guineaworm cases in the affected villages
Targeted	Covered	Targeted	Covered	Targeted	Covered				

ANNEX 4

EPIDEMIOLOGIC EVALUATION OF WATER DECADE PROJECTS

A. Methods

1. Comment - "Keep it Simple"

Except under special circumstances, evaluation should be kept as simple as possible, gathering only the minimal amount of data necessary to answer the question: What is the incidence rate of dracunculiasis in the sample villages? Of course, historical events that would influence the results of the study should be ascertained, such as periods of breakdown of the pumps, or failure of the health agent to work in the village.

One should avoid the tendency to routinely gather additional information (e.g., length of disability, sites or number of worms in body, effect of treatments, water sources used by cases, etc.) Such additional data substantially increases the time necessary to perform the evaluation--time which would be better spent visiting additional villages to increase the sample size, or doing special studies (see Annex IX).

2. Steps in Evaluation of Water Decade Projects

a. Review details of project to be evaluated: Names, location, size and other characteristics of villages involved; similar information on adjacent uninvolved villages; dates of intervention (e.g., dates pumps installed and working).

b. Determine suitable villages for study: Those receiving potable water (or other intervention) recently enough so that current disease incidence reflects transmission occurring before the intervention occurred.

c. Randomly select a sample of villages: Stratification to include villages of different size, language, geography, and climate may be useful. The number to be chosen will depend on the resources available, the prevalence of disease, and the precision required. At a minimum, to control for unforeseen random variation, at least 5 villages within each strata should be selected.

d. Match selected villages to "control" villages: Matching should be made on basis of comparability of population, ethnic group, location, and socioeconomic conditions.

e. Develop evaluation schedule and itinerary: Ideally, evaluation should occur at the end of peak transmission season, and should be repeated annually within two weeks of the anniversary of the previous evaluation(s).

f. Prepare survey instruments: Date of evaluation, village name, sub-préfecture, préfecture, estimated population, types and dates of intervention, lapses of interventions, concession roster by name, age, group, and sex.

g. Recruit and train local workers: These may be local health workers or others to serve as interpreters in the local language, as assistants, and as field clerks.

h. Meet and secure cooperation of préfet and village chiefs:

i. Perform survey: Determine active cases (persons with the worm visible on or under the skin) and presumptive cases (persons with classic skin lesion or who report having had the disease in the previous 12 months) among total persons examined. If the village is small, all concessions may be visited. Otherwise, perform a random sample of concessions using cluster sampling techniques described elsewhere (e.g., for vaccination coverage and nutritional surveys).

j. Analyze and disseminate data and results: Preferably each year, with summary of previous years' results in later years.

B. Outside Consultation

It may be useful, although not absolutely necessary, that a short term consultant medical epidemiologist be invited to participate in the difficult process of selecting representative "study" and "control" villages, to assist in preparation of survey instruments, and to participate in the first evaluations of some of the villages. Requests for such consultation should be made through the WHO, for whom the Centers for Disease Control (CDC) could provide a consultant. An estimate for the cost of one to two months consultation is included in the budget below (airfare and travel expenses only; salary would be furnished gratis by CDC).

C. Model Budget for Evaluation of Intervention Project

1. Assumptions

a. 10 "study" villages and 10 "control" villages
b. Three year life of project (minimum recommended).
c. 10% inflation per year on base year.
d. 60 CFA/km for fuel, oil, parts, and repairs.
e. 2 visits per village, and 2 round trips to Lomé for each region.
f. Total days required annually (average):

Travel to and from Lomé . .	3 days
Train local workers	6 days
Village surveys	20 days
Contingency	2 days (for unforeseen delays)
TOTAL	31 days

2. National Team

	1st Year	2nd Year	3rd Year
a. Food and lodging			
1 driver: 31 days x 3000/day	93 000CFA	102 000CFA	111 600CFA
2 epidemiol: 31d x 5000/d x 2	310 000	341 000	372 000
b. Transportation:			

Region	Round Trips	Local Travel	Total			
Maritime	160km	100km	2160km	129 600	142 560	155 520
Plateaux	800	140	3600	216 000	237 600	259 200
Centrale	1600	160	4800	288 000	316 800	345 600
La Kara	1800	140	4600	276 000	303 600	331 200
Savane	2400	160	6000	360 000	396 000	432 000

3. Local Workers-Food and Occasional Lodging

3 workers x 1500/day x 28days:	126 000	138 600	151 200

4. Miscellaneous

Printing, clipboards, pencils, recognition cards, contingency:	100 000	110 000	120 000

SUBTOTALS BY REGION

	1st Year	2nd Year	3rd Year	LIFE OF PROJECT BY REGION
Maritime	758 600	834 460	910 320	2 503 380
Plateaux	845 000	929 500	1 014 000	2 788 500
Centrale	917 000	1 008 700	1 100 400	3 026 100
La Kara	905 000	1 006 500	1 098 000	2 986 500
Savane	939 000	1 087 900	1 186 800	3 263 700

TOTAL FOR ONE EVALUATION IN EACH OF 5 REGIONS: 14 568 180

5. Outside Consultant (optional)

Airfare	900 000
45 days OMS Per diem	810 000

COST RANGE FOR ONE REGION (with consultant): 4 213 380 - 4 973 700 CFA

[385 CFA=$1 US] $11,000 - $13,000 US

ANNEX 4

SUGGESTED COMPONENTS OF PRIMARY HEALTH CARE CURRICULA

A. Training and activities

The following items should be included in training for primary health:

1. The disease - life cycle, symptoms, complications.

2. Treatment - the technique of le bâtonnage, winding the worm on a stick or match, should be taught and practiced as a method that may shorten the period of disability and encourage patients to seek care.

3. prevention - e.g., drinking potable water, filtering polluted water through cloth or special filters.

4. control measures - e.g., preventing entry of infected persons into water sources, building walls and using ropes and buckets to avoid physical entry into water sources, chemical treatment of contaminated water sources.

5. Pump repairs and maintenance - health workers should be trained and expected to perform simple repairs and maintenance of pumps, and to teach those methods to villagers.

6. Village organization and community development.

7. Health education techniques - e.g., demonstration to villagers of cyclops in drinking water.

8. Surveillance - any system for reporting the persons treated by the health worker for various diseases should include a separate category for dracunculiasis.

B. Cost

No separate budget is proposed for this Annex, as the above items will add little or no additional costs to the training and functioning of a primary health care worker. The only exception would be the cost of temephos for chemical treatment of water sources.

ANNEX 4

SPECIAL STUDIES RESEARCH

A. Suggested Areas of Needed Study

1. Chemical Control - To study the effect on the vector and on disease transmission of periodic treatment of water sources with chemicals, e.g., temephos (Abate); to study the ability of health agents to regularly carry out such treatment.

2. Health Education Research - To determine the most effective organization, methods, and techniques for influencing villager behavior and practices, especially in regard to protection of water sources (avoiding entry of affected individuals into drinking water) and personal preventive measures (filtering of water).

3. Economic Impact of Dracunculiasis - To measure losses in working days, agricultural output, or income attributable to dracunculiasis; to make economic analyses for donor agencies to justify spending funds for potable water or dracunculiasis control.

4. Clinical Studies - To develop serological and immunological tests to diagnose the disease in its latent stage (incubation period); to assess the effect of several new anti-helminthic drugs available for treating other parasites on incubating or patent dracunculiasis.

5. Epidemiology - To delineate further the dynamics and interaction of the vector, host, and agent.

B. Suggested Research Groups

1. Centre Hospitalier Universitaire, Faculté de Médecine (staff or students)
2. other faculties and schools, Université du Bénin
3. OCCGE Organization for Coordination and Cooperation for the Control of Endemic Dis
4. ORSTOM Organization for Overseas Scientific and Technical Research (France)
5. Foreign universities and research centers
6. UERMST Research and Study Unit for Tropical Medicine and Health (Marseilles, France

C. Possible Sources of Funding

1. Scientific Research Sponsors
   a. OMS WHO
   b. CRDI International Development Research Centre (Canada)
   c. NIH National Institutes of Health (USA)
   d. Private Foundations (Rotary Club, etc.)

2. Water Decade Donor Agencies
   a. BOAD West African Development Bank
   b. CCCE The Central Bank for Economic Doorperation (Govt. of France)
   c. FAC Fund for Aid and Cooperation (Govt. of France)
   d. FED European Development Fund (European Communities)
   e. USAID
   f. World Bank
   g. PNUD United Nations Development Program
   h. BAD African Development Bank

3. Other Development Agencies
   a. SIDA Swedish International Development Agency
   b. DANIDA Dermark International Development Agency
   c. NORAD Norwegian Government Aid Organization
   d. GTZ/KFW Federal Republic of Germany Aid Organization

D. Model Outline for Research Proposal to Funding Agencies

(courtesy, International Development Research Centre, Ottawa, Canada).

1. Brief Description of Project Idea

It is suggested that the initial stage of a project proposal be limited to a 2-3 page outline of the research idea. This will give the Health Sciences Division an opportunity to respond to the proposal while it is in the preliminary stage. If the idea is reasonable, feasible and falls within IDRC's funding priorities, the next step is to prepare a draft proposal along the following lines.

2. Draft Proposal

   a. Title of the study.

   b. Name and address of the institution and department proposing the research.

   c. Name, title and address of project leader (principal investigator).

   d. Other cooperating agencies (if any).

   e. Background information: i) Statement of magnitude and nature of problem and how the proposed research will contribute to its solution, ii) Description of the community in which the research will take place (if applicable).

   f. Objectives: General and specific (these should be listed in order of priority and relate to the methodology).

g. Research procedures on methodology (these should be detailed enough so that it can be clearly understood how the research will be carried out). For example:

   i. The population to be studied.

   ii. The type of sampling plan to be followed.

   iii. The size of sample to be drawn.

   iv. The type of instrumentation to be used (i.e., questionnaires, interviews, participant observation, analysis of secondary sources, and so on).

   v. The type of analyses to be conducted and how.

   vi. The method of data analysis including the statistics to be used (if any)

h. Project administration plan, i.e., who will administer the funds, also indicate the department or person and address where the funds should be directed.

i. Duration of the project. Take into account such things as delays and start up time, staff recruitment and equipment purchases.

j. Patent or copyright provision (if applicable).

k. Plans for seminars, publications, and dissemination of project results.

l. Budget estimates: This should be divided into two categories: The IDRC contribution and the local contribution. These estimates should be computed on a year-by-year basis according to the following breakdown:

   i. Personnel. List all project personnel and the approximate time in man-months which they will spend on the project.

   ii. Equipment. List all equipment requirements.

   iii. Materials and Supplies. Provide make, model and specifications, if applicable.

   iv. Travel and Per Diem. Indicate reason and (local) rates.

v. Training.

vi. Reports and Publications.

The local contribution can be an estimation of resources "in-kind" such as salaries, equipment, vehicle usage, etc.

3. Curriculum Vitae of Principal Investigators

4. Consultation

An IDRC representative will visit the project site for consultation and will be available to offer assistance in developing the project proposal.

5. Project Monitoring

Project monitoring includes two aspects:

a. An evaluation of progress regarding the technical and administrative aspects of the project (an IDRC regional representative and or program officer will usually visit a project twice per year in order to ensure that the project has no major difficulties in carrying out the stated objectives).

b. Once the contract has been signed by both parties, the first scheduled payment is made and work begins. The contract specifies an approximate schedule of payment. This is subject to regular reporting (financial and substantive).

Upon termination of the project, a final "substantive" and "financial" report is required by IDRC.

6. General Comments

Project development takes from 6 to 12 months depending on the size of the project, the quality of the draft proposal (clear and concise), and certain aspects requiring negotiation.

REFERENCES

1. Thirty-fourth World Health Assembly Resolution 34.25 on the International Drinking Water Supply and Sanitation Decade. Geneva: May, 1981.

2. Hopkins DR. Eradication of dracunculiasis. In: Bourne PG, ed. Water and Sanitation: Economic and Sociological Perspectives. New York: Academic Press, 1984: 93-114.

3. National Research Council, 1983. Opportunities for Control of Dracunculiasis: Report of a Workshop. National Academy Press, Washington, D.C.

4. National Research Council, 1983. Opportunities for Control of Dracunculiasis: Contributed Papers. National Academy Press, Washington, D.C.

5. World Health Organization. Dracunculiasis--Nigeria. Weekly Epidemiological Record 1985; 60:263-66.

6. Weniger BG. The control of Dracunculiasis in Togo during the Water Decade: Report of a WHO consultant mission. June 23, 1983.

OTHER INSTRUCTIONAL MATERIALS AVAILABLE

For Project Planning

National Research Council, 1983. Opportunities for Control of Dracunculiasis: Report of a Workshop. National Academy Press, Washington, D.C.*

National Research Council, 1983. Opportunities for Control of Dracunculiasis: Contributed Papers. National Academy Press, Washington, D.C.*

Division of Helminthology, National Institute of Communicable Diseases, 1982. Operational Manual of the Guinea Worm Eradication Programme in India. Delhi: NICD.

For flip charts and village instructional materials

World Neighbors, Divison of Communication and Education. 5116 North Portlant Av., Oklahoma City, OK. 73112.

Teaching Aids at Low Cost (TALC): Foundation for Teaching Aids at Low Cost, Institute of Child Helath, 30 Guilford Street, London WCIN IEH, England.

Motion Picture Films

"Avicenna's Thread," Scottish Central Film Library (Downhill, 74 Victoria Crescent Road, Glasgow G12 9JN, Scotland, U.K.), Catalogue No. 2FS3252. Also available in French and English from JPR Productions, 5 rue Broussais, Paris, France 75014

"Dracunculose," Office National du Film du Canada (Case postale 6100, Montreal, Quebec H3C 3H5), Serie Sante-Afrique No. 16.

*Copies can be obtained from: Board on Science and Technology for International Development, National Research Council, 2101 Constitution Av NW, Washington , DC 20418.