WHO TECHNICAL PUBLICATIONS, EASTERN MEDITERRANEAN SERIES 19

Proceedings of the Regional Workshop on Environmental Health Management in Refugee Areas

WORLD HEALTH ORGANIZATION
Regional Office for the Eastern Mediterranean

WHO TECHNICAL PUBLICATIONS, EASTERN MEDITERRANEAN SERIES 19

Proceedings of the Regional Workshop on Environmental Health Management in Refugee Areas

Peshawar, Pakistan
28 April - 2 May 1991
(Papers and Country Reports)

World Health Organization
Regional Office for the Eastern Mediterranean
Alexandria, Egypt
1994

WHO Library Cataloguing in Publication Data

Proceedings of the regional workshop on environmental health in refugee areas
Pages 206, includes 6 annexes

1. Environmental health 2. Refugees I. WHO. Eastern Mediterranean Regional Office
(WHO Technical publications, Eastern Mediterranean series No. 19)

ISBN 92-9021-185-7 (NLM Classification: WA 950)
ISSN 1020-0428

Contents

SECTION ONE
INTRODUCTION

1. Introduction

A Regional Workshop on Environmental Health Management in Refugee Areas, organized by WHO Regional Office for the Eastern Mediterranean Region (EMRO) in collaboration with the Ministry of States and Frontier Regions of Pakistan, was held in Peshawar from April to May 1991. The Workshop was attended by 32 participants, 18 from seven member countries and seven from WHO EMRO, as well as observers from the Afghan Refugee Commissionerate and representatives of the United Nations High Commissioner for Refugees (UNHCR) and the League of Red Cross and Red Crescent Societies.

Brigadier Amir Gulistan Janjua, Governor, North-West Frontier Province, opened the ceremony and gave an inaugural address. He stated that the arranging of health services without attending to proper management of problems related to environmental health was unthinkable. This applied to all health projects, but particularly to those concerning refugees since the areas they move into typically lack the requisite infrastructure. The situation becomes all the more alarming as the majority of countries facing refugee problems belong to the developing world.

Environmental health management constitutes a very important, indeed an essential, component of the health system. The need for a healthy environment is common to all situations, whether refugees are concerned or not. Communities where basic sanitation needs are not properly met face not only the threat of communicable diseases, but also loss of valuable material resources in meeting the cost of preventable sickness.

The Governor hoped that the workshop would lead to the exchange of views and discussion on selected topics related to the Global Programme Towards Health Aspects of Refugee Movements, displaced persons and emergencies, health management problems in refugee camps, national intersectoral coordination, external support in emergencies, human resources development and dissemination of information.

A message from his Excellency the Prime Minister of Pakistan, Mian Mohammed Nawaz Sharif, was conveyed. In the Prime Minister's message, the importance and relevance of environmental health management in refugee areas to the single largest quota of refugees in the world, which Pakistan is hosting, was emphasized. Mr Dil Jan Khan, Secretary to the Minister of States and Frontier Regions, also addressed the audience and emphasized the importance of this gathering. His Excellency the Governor of North-West Frontier Province welcomed the participants on behalf of the Government of Pakistan and wished them success in their deliberations and recommendations, as well as a pleasant stay in Peshawar.

Dr Hussain A. Gezairy, WHO Regional Director, in his message to the Workshop, thanked the Government of Pakistan for hosting the meeting, and the Governor of North-West Frontier Province and the Secretary, States and Frontier Regions, for being present at the inaugural session. He emphasized the fact that several countries of WHO's Eastern Mediterranean Region are currently, or have recently been, involved in refugee or refugee-related situations, and that there are more than eight million refugees in the countries of the Region. Refugee settlements in EMR vary in their characteristics; quite often there are serious deficiencies regarding environmental health conditions. If such conditions are ameliorated mainly through improvements in shelter, water supply, waste disposal and vector control, the quality of life and health status of the refugee population can be greatly enhanced.

Dr Gezairy stated that it was with this aspect in mind that WHO had organized this Workshop, so as to provide a forum for the exchange of experience and information on technical and managerial aspects of environmental health problems in refugee areas. The Workshop would lead to an exchange of views and discussion of selected topics related to environmental health problems in refugee areas; national and intersectoral coordination; external support in emergencies; development of national capabilities; and dissemination of information. It should be seen as part of a process to expand even further WHO's assistance in health-related matters to countries dealing with refugee problems. Finally, the Regional Director thanked the governments and international agencies concerned for enabling the participants to attend the Workshop.

2. Purpose and scope of the workshop

The purpose of the Workshop was to focus attention on the environmental health problems associated with refugee and refugee-related situations and to provide a forum for exchange of experience and information. The Workshop had the following objectives:

(a) to raise awareness of the importance of environmental health aspects in refugee and refugee-related situations;
(b) to foster exchange of experience and information on technical and managerial aspects of environmental health management in such situations;
(c) to provide a forum for discussion of policies and strategies for development of national capabilities regarding environmental health management in such situations;
(d) to provide an opportunity for exchange of information on approaches to environmental health management in such situations;
(e) to review aspects of intersectoral coordination and external support for environmental health interventions in such situations; and
(f) to identify areas for action to enhance preparedness for environmental health management in such situations.

3. Conclusions and recommendations

The participants and representatives of United Nations organizations and nongovernmental organizations present at the Workshop strongly supported the general objective of environmental health management in refugee areas and efforts aimed at (a) reducing the vulnerability of affected countries and (b) upgrading the capability of national agencies to deal with such situations. It was recognized that lack of environmental health management can seriously impair environmental quality, with damage to and even destruction of basic lifeline services as well as, in certain cases, pollution of air and water resources. For this reason, special attention should be given to all environmental health aspects in refugee areas. Many countries are now in the process of developing and implementing national emergency plans; it

is important that proper attention be given in such plans to environmental health aspects and that agencies responsible for environmental health participate actively in the whole exercise.

It was against this background that the Workshop drew the following conclusions and drafted the associated recommendations.

3.1 WHO's role in environmental health management in refugee areas

(1) WHO may support strengthening of the concerned health ministries in environmental health activities, such as water supply and sanitation, in both normal and emergency situations.
(2) WHO may continue to play a catalyst role with all international agencies dealing with disasters in all health-related aspects.
(3) WHO may develop a kit containing essential tools/materials for environmental health services in emergencies for about 10 000 persons.
(4) WHO may continue to play its role, together with UNHCR and the host government, in ensuring that sanitation programmes provided to refugees satisfy the objectives of such programmes.
(5) WHO may assist host governments to develop their own local guidelines and protocols for environmental health management in refugee areas.

3.2 Environmental health management in refugee situations, preparedness and relief

(1) WHO and other external support agencies may assist Member States to develop an Emergency Preparedness and Response (EPR) national master plan.
(2) Environmental health programmes may be planned by the host country in collaboration with WHO and other external support agencies.
(3) A national health emergency plan, setting out all the assistance needed from international agencies or nongovernmental organizations, should be developed; work should proceed according to this plan of action to avoid duplication of effort.
(4) Responsible international agencies, together with the host country, may introduce planning and funding modules geared towards development of refugee areas in the host country to overcome the operational and funding constraints on long-term refugee relief.

3.3 Institutional aspects

(1) Each Member State may appoint a focal point for environmental health activities at all levels.
(2) Each national Civil Defence Department should have a specialized corps for relief services.
(3) Member States may make funds available for immediate needs in disaster emergencies and resettlement of displaced persons.

(4) Research into suitable methodology of repatriation and settlement is required.
(5) Refugee health programmes, based on the principles of the primary health care approach, should be developed.
(6) The health programme in general and the environmental health management programme in particular should be managed by means of an integrated approach, with the existing local departments supported by United Nations agencies and nongovernmental organizations.
(7) A high-level national coordinating committee should coordinate all incoming assistance from donor countries and the programmes of refugee relief organizations.
(8) Member States should strengthen local institutions in both the governmental and the nongovernmental sector. This should be promoted in order to decrease dependence on outside support and overcome any budget cuts made by the donor community.
(9) Member States should have food safety and quality control mechanisms in environmental health units so as to be able to cope with analysing both national and donated food in disaster situations.

3.4 Human resources aspects and training

(1) There is need to educate people at all levels, as well as environmental health specialists, in the field of environmental health for emergency preparedness and relief. A training programme may be developed with the support of WHO and other external support agencies.
(2) Civil defence staff and other, related, staff should be trained as permanent trainers in the handling of emergencies, including rehabilitation of refugees at national levels.
(3) WHO may develop and establish an environmental health programme for refugees at regional level which would coordinate information and activities and provide assistance in training and development.

3.5 Health education, community participation and self-reliance

(1) Women should be encouraged to play an important role in community participation in environmental health measures provided for refugees and displaced families.
(2) Health education materials should be prepared for children to motivate adults, particularly on the use of latrines.
(3) A health education plan should be developed utilizing effective communication channels, with emphasis on (a) health messages to promote sanitation, (b) school health and (c) education of community health workers.
(4) Host countries and nongovernmental organizations should standardize the training and education approaches to be adopted for refugees from the same country who have been settled in two different countries.
(5) UNHCR and host countries should encourage participation of refugee populations and involve them, from the very outset, in welfare programmes established in the camps, with a view to handing over most of the management of the camps to the refugee community itself as rapidly as possible.

3.6 Appropriate technology

(1) WHO may disseminate information on appropriate technology related to environmental health management in refugee situations to Member States, taking into consideration past experience in other countries.
(2) The use of appropriate technology, alternative construction materials and effective operation and maintenance in environmental health management in refugee situations should be encouraged.
(3) Wastewater disposal and solid waste management in refugee camps should be given special attention.
(4) Member States should take into consideration the fact that new settlements (camps and refugee villages) need to be established according to principles of town planning, so as to allow for the natural development of settlements.

3.7 Information exchange

(1) WHO may assist in disseminating valuable information and experience through the designated focal points and CEHA (CEHANET).
(2) UNHCR, UNRWA and other international organizations, nongovernmental organizations, national agencies and voluntary agencies should give special attention to information exchange issues that can be implemented for the development of national capabilities in environmental health management in refugee and refugee-related situations.

3.8 International cooperation and intersectoral coordination

(1) CEHA should be further strengthened in the area of technical advice, training and support services for refugees and displaced families.
(2) International agencies and nongovernmental organizations should minimize their expenditures on areas which are not directly related to the basic needs of refugees.
(3) Periodic evaluation of the environmental health conditions in refugee settlements should be carried out through WHO, UNHCR and other concerned external support agencies, including local expertise.
(4) All international agencies and nongovernmental organizations should work together to improve conditions in such settlements, in accordance with Ministry of Health policy.
(5) International organizations should deploy experienced personnel and, wherever possible, utilize national expertise.
(6) International aid for refugees should be consistent with the magnitude of the problem and the numbers involved.
(7) A regional forum should be set up in order to discuss how current situations, resulting from a decrease in international aid, might be ameliorated.
(8) Governments, international agencies and nongovernmental organizations should provide more input into the development of resources for income-generating schemes and human resources development (including education).

(9) Sustained funding of environmental health programmes in refugee areas should be based on the effective pooling of financial resources from both humanitarian and development institutions.

SECTION TWO
TECHNICAL PAPERS

WHO programmes in health aspects of refugee areas

J. Hazbun

Executive summary

This paper has been produced for a Regional Workshop on Environmental Health Management in Refugee Areas. It reviews WHO's global mandate in emergencies and disasters and enumerates the steps and health needs of refugees/displaced persons from the time of their departure from their home countries to their eventual repatriation or resettlement.

WHO's role in meeting these needs in collaboration with other UN bodies, NGOs and host governments is discussed within the context of the leading role WHO has to play in coordinating and standardizing emergency relief work.

Finally, the paper reviews WHO's activities in this field in 1990, illustrating WHO's humanitarian role in alleviating the sufferings of refugees in the health field by complementing the work of other UN agencies, NGOs and host governments in providing the necessary protection for refugees/displaced persons around the world.

1. Introduction

The involvement of the World Health Organization (WHO) in the health needs of refugees stems indirectly from the Organization's mandate(1) in responding to emergencies in which this is explicitly stated as one of its functions requiring it to extend technical cooperation and necessary aid to areas afflicted by disasters.

Several World Health Assembly resolutions emphasize the leading role WHO should play as the UN specialized agency in the field of health in disaster mitigation, management and preparedness. These resolutions also recognize the importance of an integrated response, linking emergency health measures with long-term development(2). Therefore, WHO has a role to play in refugee areas alongside the Office of the United Nations High Commissionner for Refugees (UNHCR), the leading agency in refugee matters of the United Nations system.

---

(1) Chapter II, Article 2, item (d).

(2) Resolution WHA34.26 (1981) emphasizes the role of WHO in emergency preparedness while resolution WHA38.29 (1985) recognizes the linkage between emergencies and refugees health. Another resolution, WHA42.16 (1989), sets out the Organization's responsibility for fostering action in the health sector towards achieving the goals of the International Decade for Natural Disaster Reduction (1991-2000).

Spin-offs from disasters that strike various areas of the world are movements of displaced people who flee from the effects of such disasters. The magnitude of the problem depends on the type of the disaster in question. Sudden-impact natural disasters, such as volcanic eruptions, earthquakes, hurricanes and cyclones, cause a number of population movements rather limited in number, but nevertheless important, depending on the intensity of the disaster. The displaced population may need assistance in all fields, especially health care.

On the other hand in the case of "creeping" natural disasters, such as floods or droughts, the emergency is a long-lasting one requiring involvement of a long-term nature, firstly to assist the displaced population and secondly to rehabilitate the areas affected for the eventual return of this displaced population to its own towns, villages and fields.

Other disasters causing the displacement of large numbers of people are ethnic conflicts, military operations or wars. These population movements could be of a short-term nature if the conflict is contained, but are long-lasting if it worsens or is not dealt with and its causes not addressed. Such movements of population to other areas often cause pressure on the local population in the host areas or on the environment there, thus affecting the resources of the host population and making it, too, vulnerable and requiring assistance. There should be no differentiation between the health needs of the two groups of population.

In providing assistance to displaced persons/refugees, many agencies may be involved - both governmental and nongovernmental within the host country, and internationally affiliated organizations such as the Red Cross and Red Crescent societies, as well as United Nations bodies such as UNHCR and WHO.

2. WHO's mandate in emergencies/disasters

WHO is required to furnish appropriate technical cooperation and, in emergencies, necessary aid upon the request of Member States. WHO's response to catastrophic situations forms part of its technical cooperation and, in particular, of its function as a health agency at the service of its Member States in advancing their health programmes.

The goals of such an input include:

- supporting and cooperating with the health authorities in handling emergencies;
- contributing to the minimization of health hazards caused by emergencies;
- acting as a catalyst in channelling assistance from the international donor community in addressing the *bona fide* health needs caused by emergencies.

With these goals in mind, WHO's objectives could be defined as follows:

- promoting and advocating readying of a predisaster mechanism capable of going into action in the event of disaster;
- encouraging and supporting the training of the national human resources required when an emergency/disaster strikes;
- stimulating cooperation between the health authorities, voluntary organizations and international agencies/NGOs, both in preparation for a disaster and in dealing with an emergency/disaster should it occur;
- improving health support from donors to the victims of such emergencies and disasters.

3. Health needs of refugees/displaced persons

Almost all displaced persons/refugees in the world are dependent on assistance for their basic needs such as food, shelter, health care, water and sanitation. The task of caring for them is a daunting one, for obvious reasons connected with their dispersion; these include the fact that, in most instances, they are located in areas difficult to reach and other factors governing their lives, such as restrictions on movement imposed by host governments and the meagre socioeconomic opportunities offered them in their places of sanctuary.

Health needs and services of refugees are thus dictated by the type of emergency or disaster concerned and the sociopolitical factors associated with it. In general, the field of supportive action is wide and varied; it encompasses three phases, namely:

- immediate relief phase;
- rehabilitation phase;
- repatriation and/or resettlement phase.

3.1 Immediate relief phase

During the acute emergency period following a disaster, assistance activities focus on the most basic of all human needs: medical care (Figure 1), food (Figure 2), shelter (Figure 3), water (Figure 4), sanitation (Figure 5) and protection. The flow charts appearing in the five figures summarize the actions that could be taken following a disaster. They may vary from one situation to another, depending on factors governing both the disaster and the community. This is normally a short phase; it should not last too long. Flying in medical relief teams and setting up field hospitals, a common response to disasters, should not be a high priority given the shortage of resources and time in relief operations. Self-reliance of local authorities in this case is the most important factor in saving lives.

External interventions, while justified in some instances, are costly; local use of available expertise should be encouraged. Hence the need for a preparedness plan anticipating an emergency/disaster.

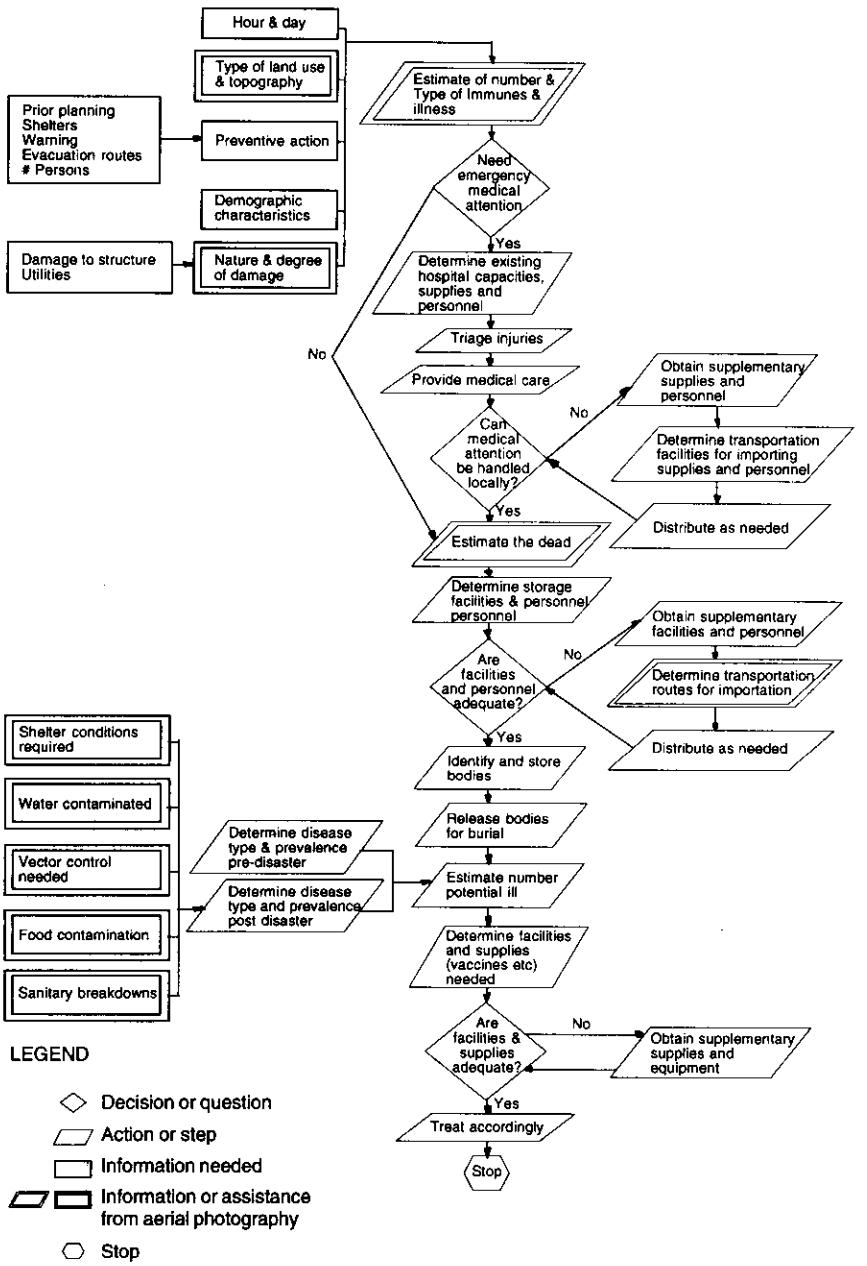


Figure 1. Flow chart for health management after natural disasters

Adapted from Preparedness Aspects: Disaster Prevention and Mitigation, Vol. 11, A Compendium of Current Knowledge, UNDRO, Geneva (1984).

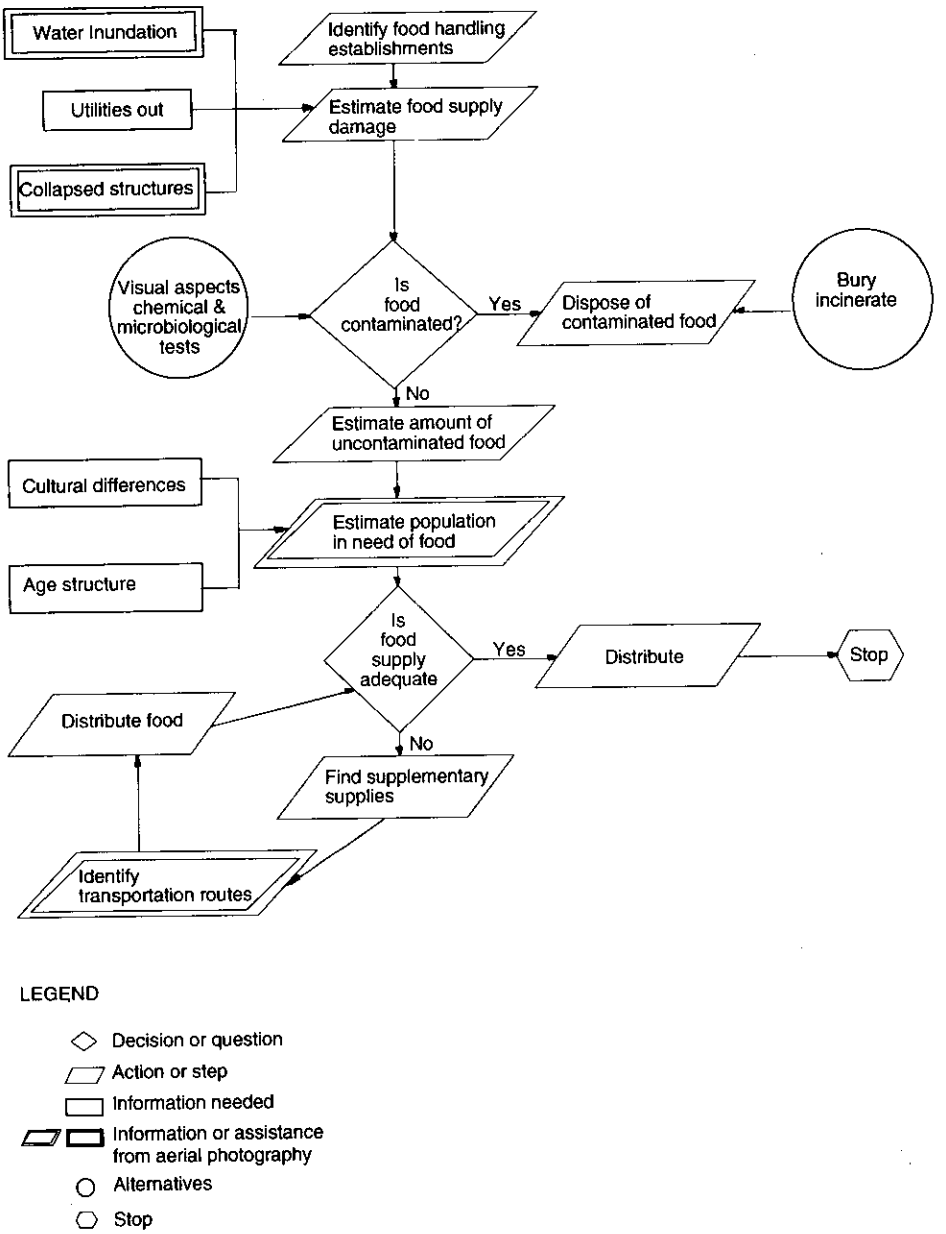


Figure 2. Flow chart for provision of food after a disaster

Adapted from Preparedness Aspects: Disaster Prevention and Mitigation, Vol. 11, A Compendium of Current Knowledge, UNDRO, Geneva (1984).

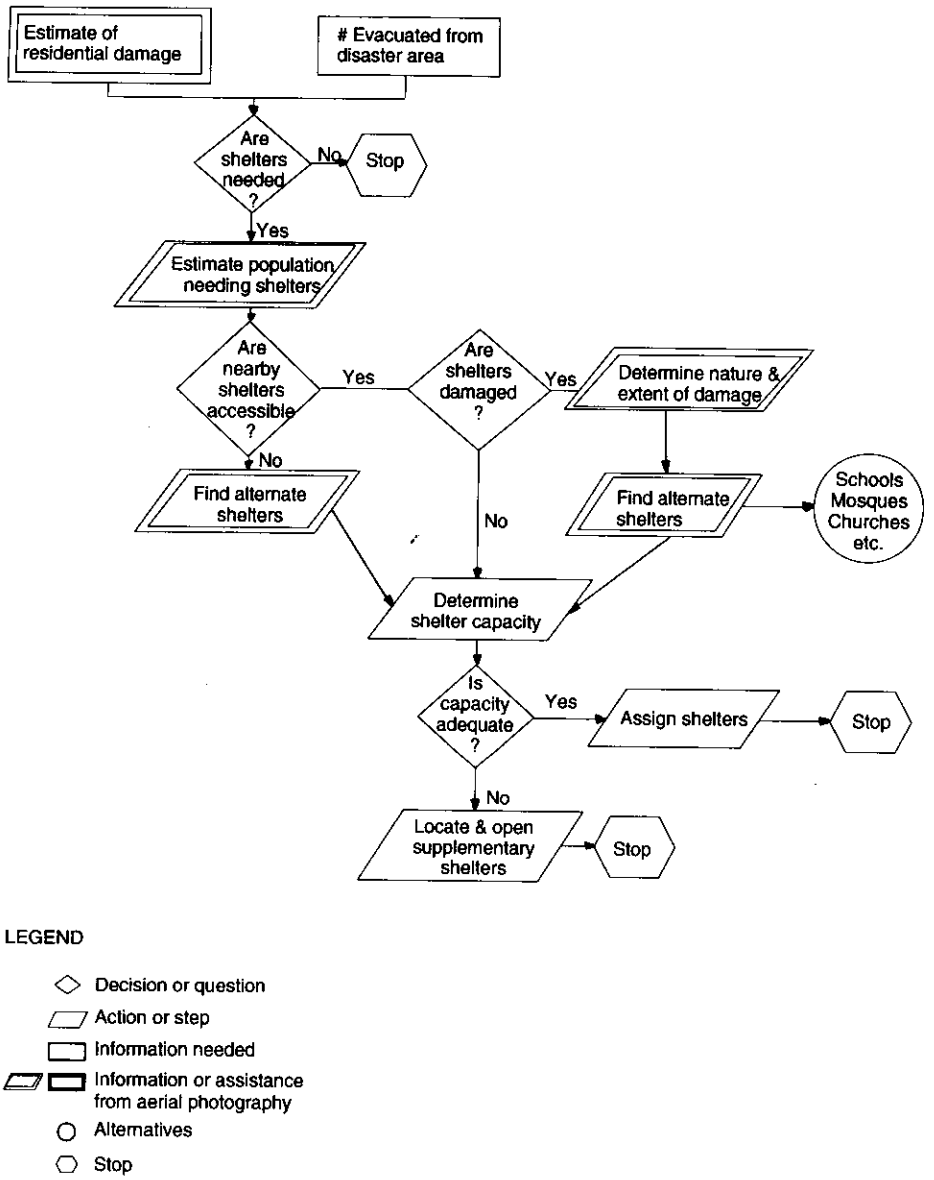


Figure 3. Flow chart for provision of shelter after disasters

Adapted from Preparedness Aspects: Disaster Prevention and Mitigation, Vol. 11, A Compendium of Current Knowledge, UNDRO, Geneva (1984).

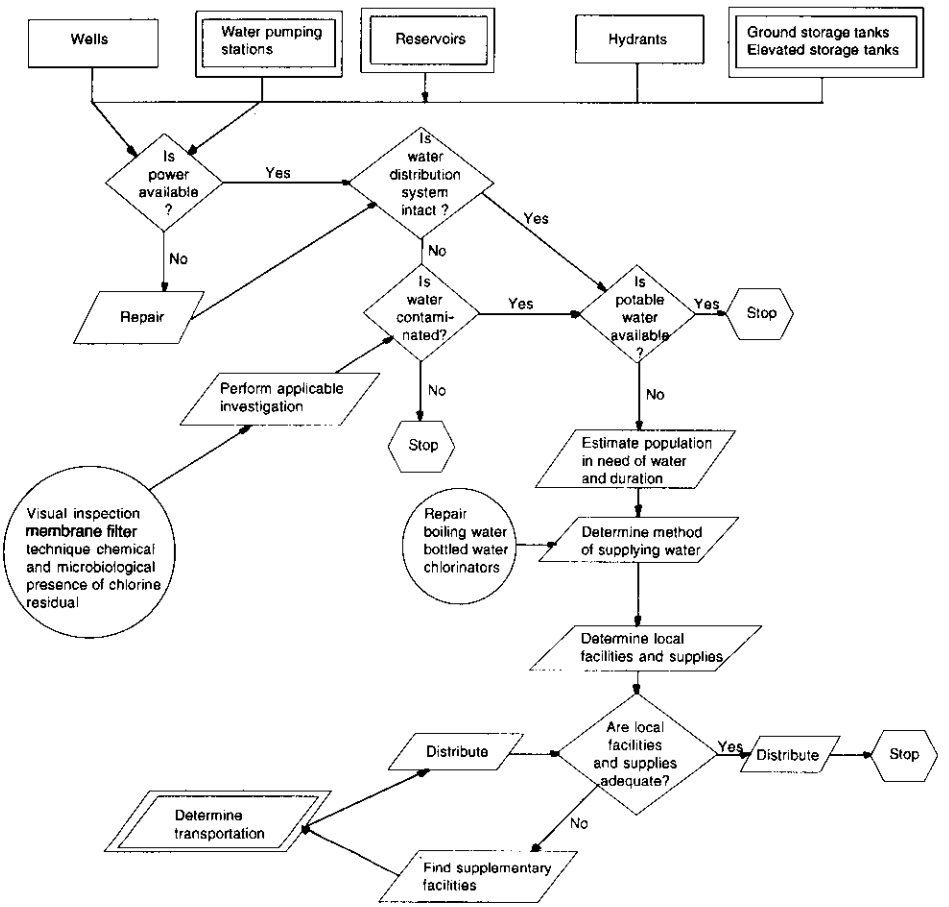


Figure 4. Flow chart for provision of water after disasters

Adapted from Preparedness Aspects: Disaster Prevention and Mitigation, Vol. 11, A Compendium of Current Knowledge, UNDRO, Geneva (1984).

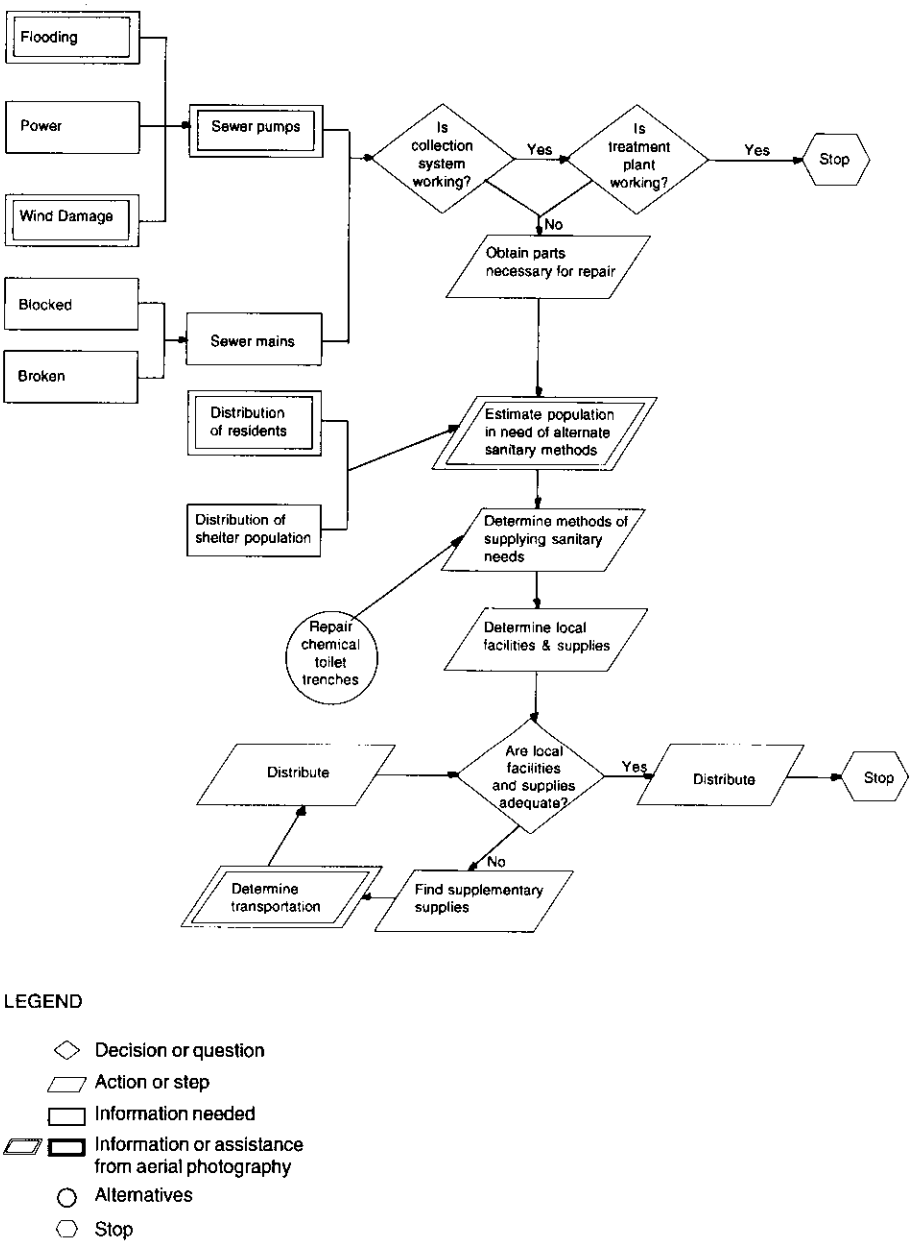


Figure 5. Flow chart for provision of liquid waste disposal facilities after a disaster

Adapted from Preparedness Aspects: Disaster Prevention and Mitigation, Vol. 11, A Compendium of Current Knowledge, UNDRO, Geneva (1984).

3.2 Rehabilitation phase

Soon after providing first aid to the injured, disposing of the dead and rubble and attending to the most basic requirements of the population, a new phase in entered into, that of rehabilitation. Often this phase does not differ from the early relief phase, whereby refugees depend on hand-outs provided by the relief agencies and/or governments.

The relief approach is often subject to criticism and is dangerous as it tends to give rise to despondency; it should be replaced by a long-term approach, laying the foundations of primary health care (PHC) very early in disaster situations by involving the refugee population in its own health care.

In fact, the activities associated with a traditional health care service should be transposed to the needs of a refugee population as soon as feasible. The diagram in Figure 6 depicts the relationship between a refugee relief coordination set-up and the "package" of services that is 'tal in a refugee PHC service.

A rehabilitation phase may not be needed if the emergency is a short-term one, but if it becomes chronic and/or the influx of refugees/displaced persons exerts heavy pressure on local services, then such rehabilitation becomes a required element in the health care of refugees.

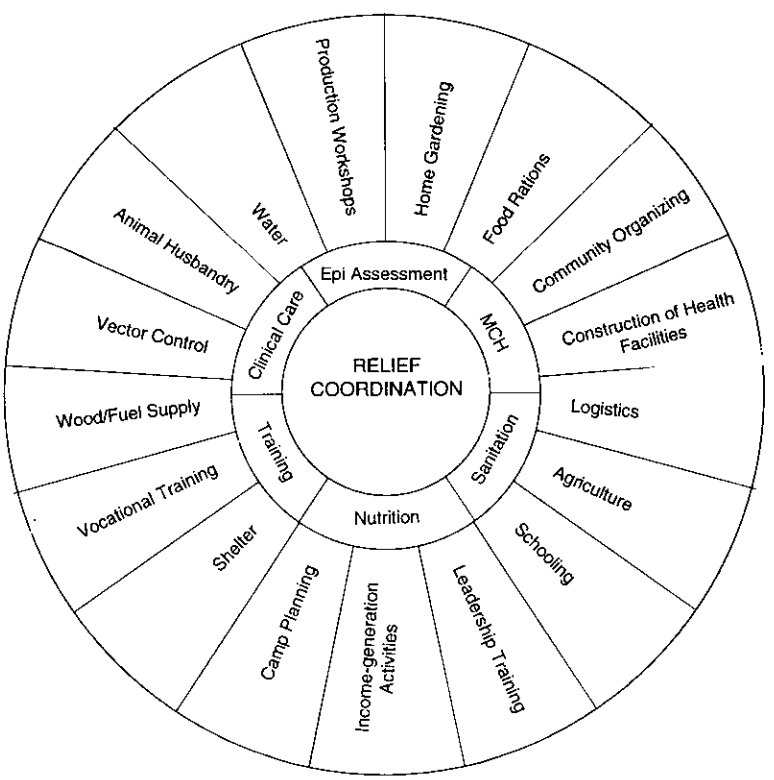


Figure 6. Relationship between refugee relief coordination work and primary health care

3.3 Repatriation/resettlement phase

When disasters/emergencies end, they often leave a legacy behind them. This is the refugee/displaced persons problem. A review of such emergencies that have occurred over several decades would indicate that the legacies they left behind are still there. Unfortunately, a repatriation/resettlement effort for refugees is associated with political rather than humanitarian considerations. Repatriation/resettlement exercises present a challenge requiring a substantial and sustained health input to make this phase as safe as possible. This could require upgrading the health facilities in the resettlement area or, in the event of repatriation, in the area originally subject to the disaster.

4. WHO's role in health of refugees/ displaced persons

Increasing awareness of the importance of health relief and emergency preparedness in the provision of humanitarian assistance in areas of conflict where refugees constitute a problem has been reflected in recent resolutions adopted by the World Health Assembly[3], as well as in the Organization's responsibility to promote the goals of the International Decade for Natural Disaster Reduction. The recognition of the need to strengthen the Organization's emergency response capacity resulted in the establishment of the Division of Emergency Relief Operations, with effect from 1 July 1989, to coordinate emergency preparedness and response with provision of rapid relief and rehabilitation measures. The Division consists of two units, one concerned with emergency preparedness and the other with relief (Figure 7). The Division's intervention is triggered by events related to a collapse of health services subsequent to a disaster. Figure 8 illustrates the relationship, scope and extent of the Division's action in such circumstances.

Long-lasting refugee problems during the past few decades have been the result either of the "creeping" type of disaster, such as the Sahel drought, or of conflicts and wars such as those in the Horn of Africa, the Middle East, China and Central America.

Refugee population problems due to "creeping" disasters do not happen overnight. Monitoring of such situations would lead any observer to detect the warning signs of a refugee problem, triggering the action needed to address the problem, that is if the country concerned is in a position to do so and the necessary emergency preparedness capabilities have been planned in advance.

Emergency preparedness, therefore, should be part and parcel of a national health policy. WHO could play, and is playing, an important role in strengthening national capabilities for emergency preparedness. Several countries have initiated effective measures in this domain; others still face considerable difficulties in introducing even the most basic preparedness strategies.

---

(3) Resolution WHA41.33 (1988) dealing with Islamic State of Afghanistan, resolutions WHA42.1 and WHA42.14 (1989) dealing with the Occupied Territories and resolution WHA42.18 (1989) dealing with Namibia.

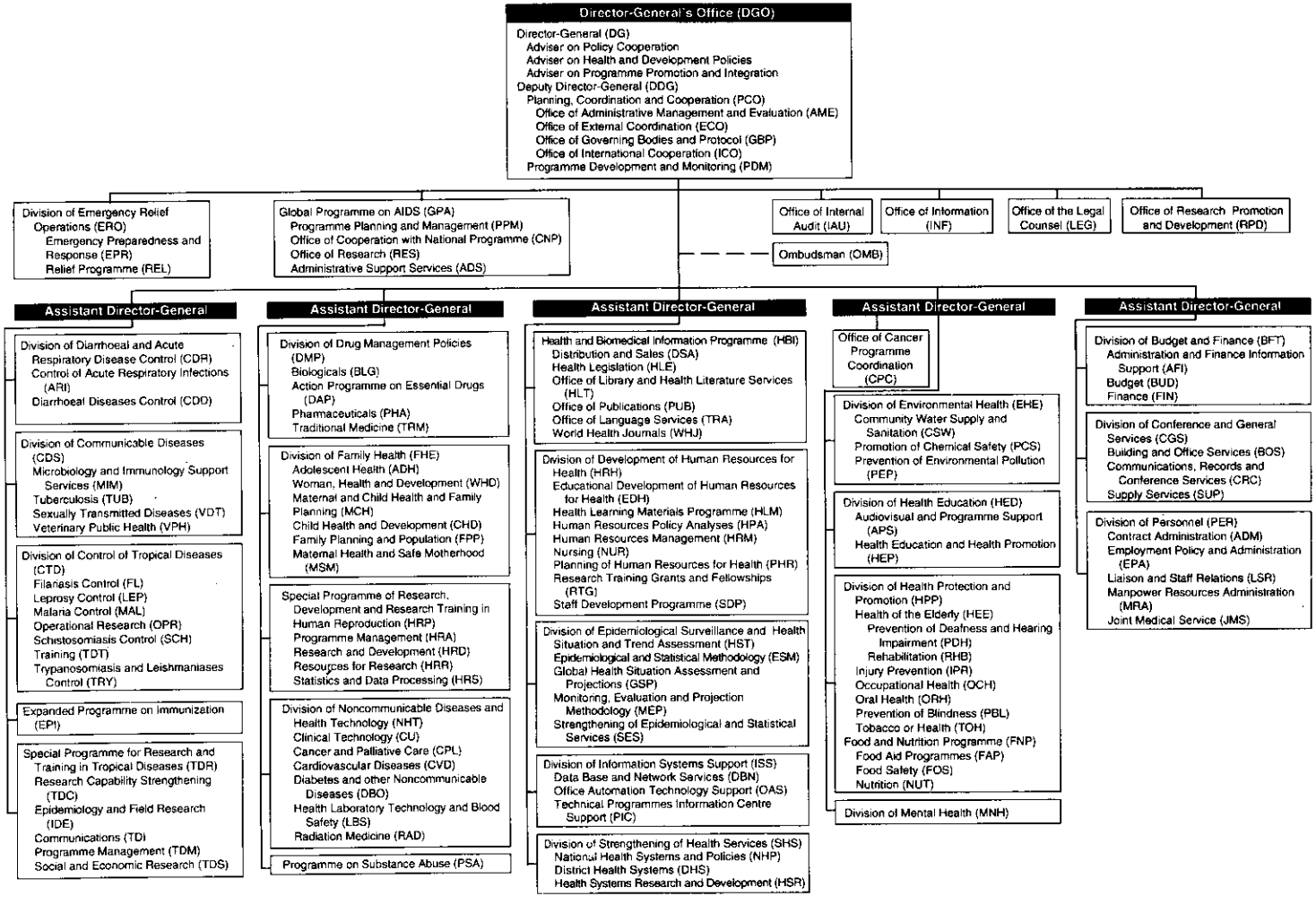


Figure 7. Structure of WHO Headquarters

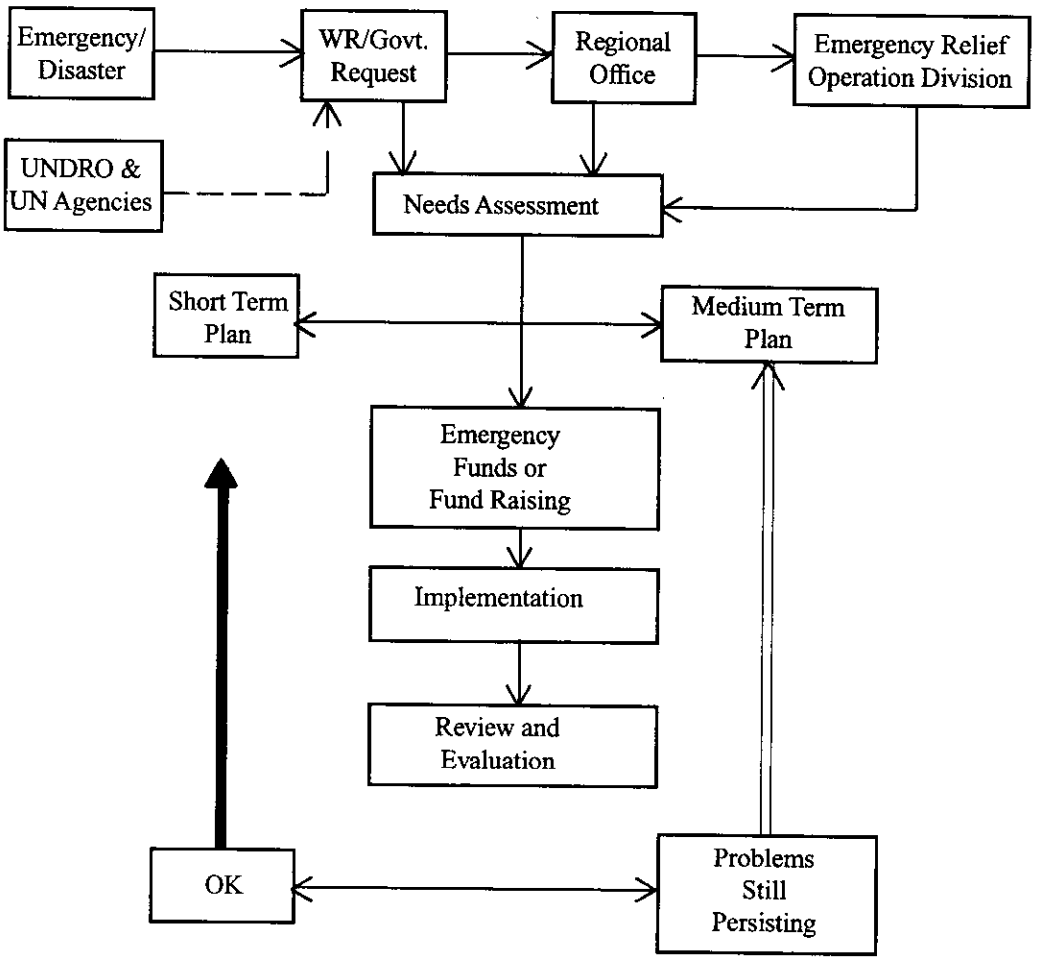


Figure 8. Relationship, scope and extent of Division of Emergency Relief Operations' intervention after disasters

Flow line

Return to normal operations

Return to Emergency/Relief Cycle

The intricate political and multisectoral character of preparation for emergencies in several parts of the world requires unique coordination and demands sustained efforts from governments in general and health authorities in particular. WHO, being the agency best equipped to provide leadership in the health sector, is called upon to give the required support to Member States in the formulation of emergency preparedness plans, in cooperation with other agencies operating in this sector.

4.1 Agencies involved

In addition to WHO, several agencies are directly or indirectly involved in disasters and their aftermath. These include, among others, UNDRO, UNDP, UNHCR, FAO, WFP, IAEA, UNOCA, etc. Other, non-United Nations, bodies involved include the ICRC, the LRCRCS and the National Red Cross or Red Crescent societies. A large number of development-oriented agencies, and specialized relief groups, from well-known multinational organizations to local associations and private NGOs, are involved in providing relief to victims of disasters. A review of the mandates of these agencies is useful in understanding the complexities of disaster preparedness and management.

- UNDRO's mandate covers all aspects of disaster relief as well as preparedness and prevention activities. Its main broad features are: disaster preparedness, disaster prevention, relief coordination, and technical assistance in relief work and mitigation of the effects of disaster. Resolution 2816 (XXVI-1971) of the UN General Assembly authorized the establishment of UNDRO's permanent office in Geneva as the focal point for disaster relief, preparedness and prevention in the UN system, headed by a Disaster Relief Coordinator reporting to the Secretary-General.
- UNHCR came into being as a result of resolution 319 (IV-1947) of the UN General Assembly to appoint a United Nations High Commissioner for Refugees. The Statute of the Office of UNHCR, detailing its functions and responsibilities, is embodied in resolution 428 (V-1950). UNHCR reports annually to the General Assembly through ECOSOC. In addition to its leading role in the protection of refugees, UNHCR provides emergency aid to them. It may appeal for funds to finance durable solutions to refugee problems.
- UNICEF's responsibility is to assist developing countries in the formulation of policy, plans and programmes for the benefit of children. It was in the first UN General Assembly that resolution 57 (I-1946) was established to provide emergency assistance to children in war-ravaged countries. By resolution 802 (VIII-1953), the Fund was placed on a permanent footing and charged with giving assistance, particularly to developing countries, in building up permanent child health and welfare services. It too reports to the United Nations through ECOSOC.
- ICRC (The International Committee of the Red Cross) was established in 1863. Its work is based upon the Geneva Conventions and their additional protocols, the Statutes of the International Red Crescent Movement, and the resolutions adopted by the International Conferences of the Cross and Red Crescent. The principal objective is to act as a neutral, humanitarian institution and neutral intermediary in cases of armed conflict. Its principal activities are to assure protection and assistance to people in case of armed conflicts, to provide medical assistance to victims, to intervene to protect prisoners, to conduct searches for missing

persons, and to establish humanitarian principles of warfare. It also extends its support in catastrophes and emergencies.

- LRCRCS (The League of the Red Cross and Red Crescent Societies) was founded in 1919. Its objective is to prevent and alleviate human suffering through the activities of national Red Cross and Red Crescent Societies, thus contributing to peace. It encourages the creation and development of national societies in developing countries; it advises and assists these societies in the development of their services; it organizes and coordinates international relief for victims of natural disasters and refugees outside areas of conflict, often launching world-wide appeals for aid; it also promotes the adoption of national disaster preparedness plans.
- NGOs (nongovernmental organizations), in disaster situations, fill unavoidable gaps in official relief efforts. These organizations have direct and close access to donors as well as to beneficiaries. They are capable of channeling large amounts of resources directly to disaster victims for relief, rehabilitation and reconstruction. Their role as operational partners in the delivery of services to refugees in a number of UN agencies' relief operations is a very important one. The list of NGOs is too long to enumerate them in this paper.

4.2 Coordination/standardization of emergency relief work

To address this kaleidoscope of agencies involved in disaster management and relief work, WHO is establishing mechanisms and procedures to coordinate relationships between the Organization and all these bodies. A number of agreements and exchange of letters with agencies involved have been signed(4). Emphasis has been on emergency programme development since the establishment of WHO's Division of Emergency Relief Operations, through technical cooperation, training and the planning of disaster management; emergency relief was also provided in the form of essential supplies and technical advice through coordination of services. A descriptive account of the activities undertaken is given in the following section of this paper.

Examples of WHO's contribution in providing immediate support for a speedy diagnosis of the health impact and assessment of needs after disasters are a set of assessment protocols (Annex 1). Diagnosis of the health impact of disaster requires expertise in and familiarity with rapid response. Hence, these protocols were prepared to assist WHO personnel to rapidly assess both the immediate and the potential health impact of a broad range of emergencies and disasters. They also serve as possible guidelines for national health personnel who are interested in and have specific responsibilities for emergency preparedness and response, including epidemic detection and control.

Another role played by UN agencies in disasters is the dissemination of information and coordination of international assistance, in order to minimize the amount of unsolicited or unproductive assistance and to maximize the amount of support for genuine health priorities. The standardization of relief health work in the development, implementation, monitoring and

(4) Letters of Understanding with LRCRCS and ICRC were signed on 16 November 1987 and 30 November 1987 respectively. Similarly, Memoranda of Understanding covering collaboration and coordination between WHO and UNHCR, IAEA and various other operational agencies such as UNOCA and UNRWA have also been drawn up.

evaluation of a common approach and uniform programme content, to meet the most urgent needs effectively and efficiently in a disaster affected area, should figure as a priority.

Standardization of methods, approaches and resources contributes to rapid and appropriate delivery of relief. Examples of such standardization are the training courses, workshops, seminars and meetings organized to prepare the necessary cadres involved in disaster mitigation/relief. Training and mobilization of physicians, nurses and other health personnel, as well as associated sectors and members of the community, form the basis of a successful disaster management effort.

WHO, in cooperation with ICRC and the University of Geneva, has been offering for a number of years a course in Health Emergencies in Large Populations (HELP), focusing on the health consequences of refugee situations. UNHCR has developed some training materials for field staff which include modules on refugee health and nutrition. Médecins sans Frontières, in collaboration with EPICENTRE, provides training particularly directed toward the health needs of displaced populations. Other training activities include the biannual course offered by the Centre for Research on the Epidemiology of Disasters (CRED) and the Catholic University of Louvain in cooperation with WHO. CRED has also developed computer software (Disaster Events Database). (See Appendix 2.)

The development of practical guidelines/training materials represents another means of standardization. WHO/PAHO has developed a number of such materials (Appendix 3). These training materials/reference books provide material that could be adapted by national and regional training institutions in teaching emergency preparedness and relief work.

WHO has played a major technical role in the standardization of essential drugs. The proven usefulness of this step resulted in the production of an Emergency Health Kit (Appendix 4) to be used in providing health care for displaced populations. It is now being used as a standard kit by several agencies and NGOs.

These efforts are not limited to WHO; a number of other agencies and NGOs have developed equipment, such as inflatable water tanks, that can be rapidly shipped to disaster sites. Standard modules for field hospitals are now available on the market. It is important that technical guidelines accompany any kits provided; they will be of no use, or could even be harmful, if the intended beneficiaries do not know how to use them.

5. WHO's emergency relief operation activities in 1990

A brief review of WHO's emergency relief operations in 1990 are useful at this point in time to shed light on the Organization's global involvement in refugee health in areas of conflict around the world.

5.1 Relief programme

The programme offers to Member States technical and other support in such situations as post-war or post-natural disasters, when health care systems have been severely affected by

destruction of infrastructure, damage to equipment, scarcity of resources and supplies and loss of skilled manpower. While reconstruction and rehabilitation take place, an opportunity is offered to local authorities to reorient their health strategies in order to respond more closely to newly emerging needs. Often, primary health care takes stronger root during such a transition phase, when both the necessity and the challenge to reach out to communities become more apparent. The programme provided the following services in 1990.

5.1.1 Islamic State of Afghanistan

WHO worked closely with UNOCA, the UN coordinating body, and UNDP, other UN agencies and NGOs to reach rural areas across the border from Pakistan and Islamic Republic of Iran, providing a direct input in the reconstruction of health care facilities, the training of health care staff, the provision of essential drugs and other supplies and equipment and the rehabilitation of disabled Afghans. WHO supported 37 projects in this way, at a total cost of over US$11 million. In urban areas, cooperation was provided to a pharmaceutical factory in Kabul for the production of essential drugs and intravenous fluids. An orthopaedic workshop was also supported. The cost of the operations on that side of the 'line dividing government-held urban areas from opposition-held rural areas, amounted to almost US$2.7 million.

Meanwhile, WHO proposed the formulation of a Master Plan for Health which would reflect the views and intentions of both parties, with WHO acting as a facilitator in the dialogue. The plan is now ready for revision, based on comments received by both parties and by a number of WHO technical divisions. Covering a period of five years, the plan lays heavy emphasis on the rehabilitation of peripheral health facilities and on primary health care. A memorandum of understanding was signed by WHO with each of the two parties, guaranteeing full cooperation from them and the provision of safeguards for the staff operating within Islamic State of Afghanistan.

5.1.2 Cambodia

WHO input ceased between April 1975 and April 1980; indirect cooperation and assistance has been taking place, through missions and other forms of cooperation under the auspices of UNICEF and ECRC, since 1980. WHO participated actively in two important missions undertaken in May/June 1990. The first one, mounted by UNHCR, scrutinized the repatriation modalities of the refugees on the Thai-Cambodian border and the activities required to strengthen infrastructure in key services and sectors in the returnees' areas. The second, sponsored by UNDP, examined the need for upgrading the health structure, as well as the health implications of the establishment of an interim presence in Cambodia entrusted with the implementation of a peace accord leading to a freely elected government in that country.

WHO potential lines of action in the process of repatriation of refugees and the establishment of a presence in Cambodia are preliminary phases of a long march towards a process of rehabilitation and reconstruction of health facilities and the development and operation of the health services there.

5.1.3 Gulf crisis

With the outbreak of the Gulf crisis on 2 August 1990, some 750 000 evacuees had, by the end of 1990, transited through Jordan, with some loss of life. During the initial first month of the crisis, reception centres set up by the Jordanian Government had over 100 000 evacuees at

one time; thus was beyond the handling capacity of these centres. An appeal for humanitarian assistance to deal with the problem was launched on 22 August by the Government, to which the international community responded.

WHO's catalytic action was to estimate the costs of providing health care to evacuees and in developing a contingency plan covering Syrian Arab Republic, Islamic Republic of Iran and Turkey to deal with any future influx of evacuees. In 1990, WHO channeled over US$1.8 million to the Ministry of Health of Jordan for this purpose.

5.1.4 Islamic Republic of Iran

On 21 June 1990, an earthquake shook six provinces of Islamic Republic of Iran, destroying three cities, badly damaging six towns and over 1000 villages, killing some 46 000 persons, injuring 100 000 and rendering some 1 million homeless. WHO responded to this natural disaster by providing approximately eight metric tons of emergency health kits as well as technical expertise in planning a consultation on reconstruction/rehabilitation of the health services in the affected areas.

This consultation was held in Teheran on 21/22 July 1990 with WHO collaboration. The results of the deliberations led to a US$16 million reconstruction/rehabilitation plan which is being used by the Iranian Government as a basic document for fund-raising. In addition, WHO sent a three-man mission to Islamic Republic of Iran late in 1990 to advise the Government on the construction of health facilities, using precast concrete earthquake-resistant materials. A model plan for a health centre, consisting of multiples of 3.6 x 5.4 metre modules, was developed.

5.1.5 Lebanon

WHO provided medical kits and extended its cooperation in the formulation of a rehabilitation and reconstruction plan encompassing the strengthening of the Ministry of Health, the rehabilitation of six hospitals and the expansion of disease prevention and control programmes. The plan was finalized by the end of 1990. It is intended to complement the ongoing programme of collaboration between WHO and the Government of Lebanon under regular budget funding.

5.1.6 Liberia

The outbreak of hostilities on 24 December 1989 prompted a mass exodus of Liberians, estimated at 800 000, into three neighbouring countries, namely, Sierra Leone, Guinea and Côte d'Ivoire.

Due to the ethnic and cultural ties that bind the refugees with the host populations, no refugee camps were set up and most of the refugees were integrated, to varying degrees, with host families in the countries of asylum. This, however, strained meagre resources of these families, who are now considered as an affected population.

In November 1990, WHO carried out an assessment of the health needs for 1991 of this refugee/affected population and participated in an interagency mission which assessed the needs of the 400 000 displaced persons now living in Monrovia. WHO also participated in an interagency meeting held at World Food Programme (WFP) headquarters in Rome in December 1990 with the aim of examining the humanitarian needs/requirements in 1991 for refugees, affected populations and displaced persons.

WHO fielded a medical coordinator to Monrovia to cooperate with UN agencies and NGOs in setting up a field hospital, as well as in assessing the rehabilitation of the health infrastructure of the capital.

5.1.7 Namibia

The WHO relief programme provided coordinated support to Namibia while preparing for its independence. Following intensive collaboration with United Nations Technical Advisory Group (UNTAG) and with the administration of Namibia in the field of emergency health planning and returnee integration during 1989, the health sector assessment carried out by WHO formed the basis for 17 technical missions immediately after the elections in November 1989. The incumbent Government requested an assessment of legal issues in health with regard to racial discrimination, registration of medical staff and the establishment of health policy through a health council act. Other major missions to Namibia addressed, *inter alia*, restructuring of the health system, AIDS prevention and control, blood transfusion services, water supply and sanitation, malaria control and mental health services.

The intersectoral UN Volunteer (UNV) programme has expanded further with the recruitment of a health UNV coordinator and the recruitment of UNV health specialists. After the independence of Namibia on 21 March 1990, the emergency operations of WHO became a regular country programme of WHO's African Region.

5.1.8 Occupied Territories

The WHO programme for the Health Conditions of the Arab Population in the Occupied Territories including Palestine, aims to provide support in improving health conditions within three domains. Firstly, the three WHO collaborating centres continued their activities in the fields of applied research and training within limits imposed by the situation. Secondly, the formulation of some 45 projects in the early part of 1990, of which 34 were deemed suitable for proposing to funding agencies, yielded a good response from donors. WHO is directly funding three projects, with a total cost of US$1 014 500. By the end of the year, commitment had been expressed by donors to finance six projects for a total amount of US$872 000. These projects were mostly generated by NGOs and private hospitals in the Occupied Territories. They encompassed such activities as infrastructure strengthening (hospitals, health centres and sewerage systems), health system development, (training, technical equipment upgrading), and supplies of drugs. Thirdly, the WHO programme of technical support was mobilized to respond to a flow of appeals originating from territories where, as a result of the Gulf crisis, health care facilities were facing an acute shortage of financial and other resources. In response to this, WHO launched an appeal to potential donors which, by the end of the year, had resulted in pledges expressed by donors to a level of US$7 300 000, and further positive responses were being received. WHO continued to coordinate its programme of activities with UNRWA and UNDP, as the initiatives of the three agencies in the health field complement each other appropriately.

5.2 Emergency preparedness and response

WHO's Division of Emergency Preparedness and Response, as its name implies, is concerned with collaboration with Member States in preparation of disaster preparedness and response plans to mitigate such disasters and, when they occur, to respond effectively.

This entails coordination with government ministries, local voluntary organizations and other UN agencies, as well as with bilateral aid agencies. Such coordination renders the exercise unique in its intricacies.

Other responsibilities include response to disasters immediately after they occur. It is essential that response be prompt. Relief may take the form of supplies, or even prepositioning of supplies in anticipation of such disasters.

The opportunity provided by the declaration of the International Decade for Disaster Reduction should form the foundation for an all-out effort to sensitize governments, agencies, communities and even individuals to the importance of preparedness for disasters.

6. Conclusions

This overview of WHO's involvement in refugee health, which cannot be segregated from the other mandates and responsibilities of the Organization in its role in emergencies and disasters, shows the need for close coordination at all levels, namely:

- at local level where the emergency/disaster creating a refugee/displaced persons situation has occurred;
- at regional level (district, province etc.) which serves as a vital link between the stricken area and the central government;
- at national level where resources to deal with a disaster/emergency are available and could be mobilized;
- at international level, due to the spilling over of the disaster/emergency or due to the global interdependence to which the world is subject.

The recent history of disasters leading to refugee situations has illustrated these phenomena of interdependence and spilling over of the problem to neighbouring countries. In Africa, Asia and Central America, conflicts have caused a large number of refugees to cross borders, while a new element is the existence of "environmental refugees", victims of chemical and/or nuclear accidents such as the nuclear explosion at Chernobyl or the warming of the global environment and its predicted effects on low-lying atoll island nations such as those situated in the Pacific and Indian Oceans.

Another problem that faces the international community is the diminishing amount of resources for provision of assistance to refugees. This demands efforts to administer the available resources more wisely and efficiently. It is therefore necessary that agencies/governments think more seriously about these and related problems, in order to elaborate strategies that could arrest the degradation of the environment, as well as to prepare communities to face any possible disasters and respond to them with timeliness to save lives, minimize suffering and, as far as possible, mitigate other harmful effects.

Appendix 1
Rapid assessment protocols

These Rapid Assessment protocols form part of a series that focus on rapid health assessment in emergencies. They have been prepared to assist WHO personnel in supporting country-level efforts to rapidly assess both the immediate and the potential health impacts of a broad range of emergencies and disasters. The protocols are intended to serve as possible guidelines for national health personnel who are both interested in and have specific responsibilities for emergency preparedness and response, including epidemic detection and control.

1. Introduction to rapid health assessment (ERO/EPR/90/1.1)

- Rapid Health Assessment in Epidemics: First Steps (ERO/EPR/90.1.2.)
- Rapid Health Assessment in Meningitis Outbreaks (ERO/EPR/90.1.3)
- Rapid Health Assessment in Outbreaks of Viral Haemorrhagic Fever, including Yellow Fever (ERO/EPR/90.1.4.)
- Rapid Health Assessment in Outbreaks of Acute Diarrhoeal Disease (ERO/EPR/90.1.5)
- Rapid Health Assessment in Sudden-Impact Natural Disasters (ERO/EPR/90.1.6)
- Rapid Health Assessment in Sudden Population Displacements (ERO/EPR/90.1.7)
- Rapid Health Assessment in Suspected Famine Situations (ERO/EPR/90.1.8)
- Rapid Health Assessment in Chemical Emergencies (ERO/EPR/90.1.9)

They are organized into three sections.

1.1 Section A: Preparedness checklist

This provides a simple checklist of key questions for WHO and national health personnel to review when assessing the preparedness capacity of the health sector at national level.

1.2 Section B: Rapid assessment protocol

This outlines the major principles and steps in rapid assessment of emergencies and disasters, and includes a strong emphasis on preparedness.

1.3 Section C: Information checklist and telex requirements

This summarizes the key items of information that must be collected during a rapid assessment of a potential or actual health emergency. It gives an example of a telex or fax to be transmitted to the WHO Regional Office concerned and WHO Headquarters, which includes key information required at these levels to support national emergency response.

Appendix 2
Disaster events database software

1. Scope and objectives of a disaster information system

The scope of the Disaster Information System is to organize a Disaster History Data File for epidemiological and operational research and to provide country-specific information for national programmed development, and other management information for rapid response.

At present, the base contains over 3500 events which occurred over the period 1900 to 1990. Further data entry from established sources, such as specialized institutions or insurance firms, is ongoing.

Special software to facilitate the recording, use and upkeep of the database has been developed by CRED, at the Department of Epidemiology of the Catholic University of Louvain, Brussels, a WHO collaborating centre.

Any user, whether institutional, organizational or governmental, may request information to be prepared for its use directly from CRED. Active collaboration of the Organization for Foreign Disaster Assistance (OFDA) of the United States, along with support from WHO and the Agence gouvernementale de Coopération au Développement of Belgium (AGCD) has been critical for its inception.

The Disaster Events Data Base is conceived as a part of the emergency management information system being developed at WHO. Current efforts include incorporating emergency country profiles into the system and development of simplified systems for installation of this software, along with the appropriate data in national health emergency programmes.

2. Database and software description

The data are entered using a preformed screen, allowing registration of the following information:

- Source of the data
- Identification number of disaster
- WHO region
- Country of the disaster
- Occurrence of event
- Data officially declared
- Type of disaster: accident, avalanche, civil strife, cold wave, cyclone, displaced persons, drought, earthquake, emergency, epidemic, expellees, famine, fire, flood, food shortage, heat wave, hurricane, insect infestation, landslide, power shortage, refugees, storm, tornado, tsunami, unusual phenomena, volcano.

- Number of persons killed/affected/homeless/injured
- Estimated cost of damage in US dollars.
- Comments

3. Outputs of the software

3.1 Preselection of files

Preselection of files can be made on:

- Source of the data
- Year or period of time
- Disaster country
- Type of disaster
- WHO region
- Number of killed, affected, homeless or injured (with choice of minimum and maximum number).

After the selection, the programme displays the number of files selected. Options exist to list the results on screen, the print-out or to create special files to be transferred to other systems or software.

3.2 Frequencies

A frequency distribution can be obtained for all the variables.

3.3 Cross-tabulation

The selected variables define the cross-tabulation desired.

3.4 Production of graphics

Graphics can be produced using this software.

4. Contact address

CRED

- Unit of Epidemiology (EPID 30-34)
  School of Public Health
  Catholic University of Louvain
  30, Clos Chapelle-aux-Champs
  B. 1200 Brussels - Belgium

  Phone 32(2) 7643326
  Fax 32(2) 76435322
  Telex 23722 ucl wol b.

Appendix 3
Publications dealing with natural disasters

1. WHO publications

- Coordination Meeting of Existing and Prospective WHO Collaboration on Radiation Emergency Medical Preparedness and Assistance, Le Vesinet, France, 30/31 March 1987 and Southampton, UK, 1/2 April 1987, Geneva WHO (1987).
- Disaster Preparedness Update. A computerized index of an emergency preparedness and disaster relief bibliography, Washington D.C., PAHO (1983).
- Emergency Health Management after Natural Disasters, Washington D.C., PAHO, Scientific Publ. 407(1982).
- Emergency Vector Control after Natural Disasters. Washington D.C., PAHO, Scientific Publ. 419 (1982).
- Environmental Health Management after Natural Disasters, Washington D.C., PAHO, Scientific Publ. 430(1982).
- Epidemiological Surveillance after Natural Disasters, Washington D.C., PAHO, Scientific Publ. 420 (1982).
- Guide to Sanitation in Natural Disasters, Geneva, WHO, Monograph Series (1971).
- Health Services Organization in the Event of Disasters, Washington D.C., PAHO, Scientific Publ. (1983).
- Medical Supply Management after Natural Disasters, Washington D.C., PAHO, Scientific Publ. 438 (1983).
- Report of Interregional Meeting on Health, Emergency Preparedness and Response, 13/16 April 1987, Geneva, WHO (1987).
- Report on Disaster and Emergency Preparedness for Jamaica, St. Vincent and Dominica, Washington D.C., PAHO, Disaster Report Series 2.
- Simmons, S. Famine in Ethiopia Health Review, January 1985-September 1986, Geneva, WHO (1987).
- Western, K. Epidemiological Surveillance After Natural Disasters. Washington D.C., PAHO (1982).

2. UN publications

- Guidelines for Flood Loss Prevention and Management in Developing Countries. New York, United Nations (1979).
- Health for All when Disaster Strikes: Health Emergency Preparedness and Response in African Countries. Pan African Centre for Emergency Preparedness and Response, Addis Ababa (1989).

- Model Rules for Disaster Relief Operations, Policy and Efficiency Studies No. 8, New York, United Nations, Institute for Training and Research (1982).
- Natural Disasters and Vulnerability, Analysis Geneva, UNDRO (1982). Disasters and the Disabled, Geneva, UNDRO (1982).
- Preparedness Aspects, Disaster Prevention and Mitigation, Volume 11, Geneva, UNDRO (1984).
- UNHCR Guide to In-Kind Contributions in Refugee Emergencies, Geneva UNHCR (1986).

3. Other publications

- Australian Counter-Disaster Handbook, Australian Counter-Disaster College, Macedon, Victoria.
- Nunes, F. Exercise "Cariba," University of the West Indies, Jamaica.
- Ramani, S. A Computer Simulation Model for Cyclone Disaster. Indian Institute of Technology, Madrass.
- Savage, P.E.A. Disaster Hospital Planning. A Manual for Doctors, Nurses and Administrators. Pergamon Press, Oxford (1979).

Appendix 4
The new emergency health kit

1. Introduction

In recent years the various organizations and agencies of the United Nations system have been called upon to respond to an increasing number of large-scale emergencies and disasters, many of which pose a serious threat to health. Much of the assistance provided in such situations by donor agencies, governments, voluntary organizations and others is in the form of drugs and medical supplies. But the practical impact of this aid is often diminished because requests do not reflect real needs or because these have not been adequately assessed. This can result in donation of unsorted, unsuitable and unintelligibly labelled drugs, or the provision of products which have passed their expiry date. Such problems are often compounded by delays in delivery and customs clearance.

The World Health Organization, which is the directing and coordinating authority for international health work within the United Nations system, took up the question of how emergency response could be facilitated. After several years of study, field-testing and modifications, standard lists of essential drugs and medical supplies for use in an emergency were developed. The aim was to encourage the standardization of drugs and medical supplies used in an emergency to permit a swift and effective response with supplies that meet priority health needs. A further goal was to promote disaster preparedness, since such standardization means that kits of essential items can be kept in readiness to meet urgent requirements.

The WHO Emergency Health Kit, which resulted from this work, was originally developed in collaboration with the office of the United Nations High Commissioner for Refugees (UNHCR) and the London School of Hygiene and Tropical Medicine. It has now been revised, with collaboration between the Action Programme on Essential Drugs and Vaccines (WHO, Geneva), the Emergency Preparedness and Response Unit (WHO, Geneva), the Unit of Pharmaceutical (WHO, Geneva), UNHCR, UNICEF, Médecins sans Frontières, the League of Red Cross and Red Crescent Societies (Geneva), the Christian Medical Commission of the World Council of Churches and the International Committee of the Red Cross. A review of the experience of previous users of the kit, prepared by the London School of Hygiene and Tropical Medicine, as well as field experience of UNICEF and Médecins sans Frontières, were also considered during the revision. Major suppliers of the kit were consulted on the specifications of its contents.

The kit has now been adopted by many organizations and national authorities as a reliable, standardized, inexpensive, appropriate and speedily available source of the essential drugs and health equipment urgently needed in a disaster situation. Its contents are calculated to meet the needs of a population of 10 000 persons for three months. It has been renamed "The New Emergency Health Kit" because of the number and diversity of United Nations agencies and other bodies which have adopted this list of drugs and medical supplies for their emergency operations and which participated in its revision.

This booklet provides background information on the development of the kit, a description of its contents, comments on the selection of items, treatment guidelines for prescribes, and some useful checklists for suppliers and prescribes. Chapter 1 (Essential drugs and supplies in emergency situations) is intended as a general introduction for health administrators and field officers. Chapter 2 (Comments on the selection of drugs, medical supplies and equipment included in the kit) contains more technical details and is intended for prescribers.

Publication of this document was made possible by financial contributions received from the United Nations High Commissioner for Refugees, the Government of the Netherlands, the WHO Emergency Preparedness and Response Unit and the WHO Action Programme on Essential Drugs and Vaccines.

Environmental health management in refugee camps

C. Rakotomalala

1. Introduction

The importance of environmental health in the prevention of communicable diseases and promotion of health is recalled whenever the improvement of living conditions of people in urban areas, as well as in urban-fringe and rural ones, is being considered.

In most industrialized countries, environmental sanitation currently calls upon expensive technology and highly qualified labour, the latter not necessarily being intensive.

A different approach is to be chosen in countries that have a low mechanization level but also host the largest number of refugees in the world. Community participation is of fundamental importance if sanitation programmes/projects are to be successful in such cases.

Health education and sensitization measures are a well-known prerequisite for such participation. In addition, time is needed to convince both the community and individuals about benefits they can expect from a "sanified" environment. This is where the problem lies, because situations that prevail in refugee sites or camps are totally different from those usually found in traditional villages or urban quarters of a given country, time being among the major parameters to be taken into account.

While for the latter, planning aims at economic development, for the former, assistance is geared either to the survival of people in distress - the refugees at the beginning of an influx - or to ensuring for them living conditions that are acceptable until a more satisfactory solution to their plight is found.

Due to political pressures, to environmental factors which can be constraining or unfavourable, and to sociocultural as well as religious habits of refugee communities, the implementation of sanitation programmes in refugee camps can start on a very weak, if not a hostile basis. Additional constraints could be mentioned, such as:

- site allocation in an easily flooded, barren and/or hardly accessible area;
- lack of space;
- limited availability of local materials due to either natural factors or considerations related to environmental protection;
- limited time for community to get organized if only in a rudimentary way; and
- lack of personnel qualified in the technical fields concerned.

It is worth mentioning that this paper will not cover the study of those diseases which usually derive from an unhealthy environment. Instead, it will deal with the subsectors where measures are to be taken with respect to environmental health in refugee camps.

The first part of this paper consists of a brief review of those subsectors. The global approach as recommended by UNHCR is then presented. Main difficulties encountered in connection with and during the implementation of projects are ultimately discussed, together with some proposals to overcome them.

2. Domains of intervention

As clearly stated by WHO, the promotion of better health through a better environment requires a wide range of programmes to be supported. Such programmes include:

- improvements in community water supplies and sanitation;
- improvements in housing and municipal services, including solid waste disposal, for rapidly increasing urban populations;
- improvements in the living standards of rural populations through a sustainable economy and better housing and community facilities;
- improvements in environmental pollution control;
- assessment of the health risks of potentially toxic chemicals; and
- promotion of food safety.

It is to be noted that the penultimate item in the above list includes the assessment of risks derived from the use of chemicals such as insecticides for vector control; hazards related to inappropriate chemical spraying are so great in refugee camps that they have to be addressed in a specific way.

Ideally, UNHCR environmental sanitation programmes should cover all the aforementioned aspects. By definition, the political context is not propitious for long-term planning as is the case for development programmes. Intervention is therefore limited to certain priority fields.

2.1 Drinking water supply

The provision of permanently available water to community members is, and should remain, the first priority. Ways and means of achieving this objective must be adopted on the basis of comparative studies of the following possibilities: perennial springs, shallow and tubewells with sufficient yield, rainwater or surface waters of various types (river, lake, etc.) including water tankering, although the latter should be a last resort and in no way considered long-term.

As the case may be, the design of a water supply scheme might involve considerations related to storage, means of drawing and collecting water, distribution, etc., the choice of the water source being only the first step in an exercise which can be quite complex.

Environmental sanitation measures are in fact complementary measures aimed at reducing or preventing deterioration of water quality. While neither time nor resources are available to supply water that would satisfy high quality standards, as a paradox, any water supply system not meeting these standards could foster the outbreak of water-borne diseases.

In emergency situations, which are by definition of short duration, the challenge that decision-makers and experts usually have to face is to design, and implement, within a short period of time, a system which often has to be durable if it is to be reliable.

2.2 Human excreta disposal

The method of intervening is often as follows: delineate at the earliest stage defaecation areas, start digging trenches, initiate the construction of latrines - ventilated or not, communal or individual - and so on. The community should be involved in various steps such as planning, design, construction and, of course, maintenance.

The main question is how to build an efficient barrier against faecal contamination through a sufficient number of sanitary facilities while ensuring that such facilities are properly used, are maintained by the users in a permanent state of cleanliness, and will not become a source of problems such as bad odours, flies, collapse after the very first rains, etc.

Excreta consists of substances of high organic content. It is deemed necessary to reuse/recycle these substances for the following reasons:

- ecological consideration, i.e. minimization of solid pollution from sewage sludge which is in any case to be disposed of;
- economic purposes, through the manufacture of compost as fertilizer or the use of stabilized nightsoil as a filling material;
- practical/technical reasons in cases, for example, where water is lacking to ensure reliable operation for a pour-flush system.

There should not be any major problem in installing an appropriate system in refugee camps for such reuse. This option is yet to be promoted and ways and means to be studied accordingly.

2.3 Solid waste/domestic refuse

The quantity of garbage generated by refugees is often not considered substantial and it therefore tends to be neglected. Yet the daily amount of garbage, as well as its weight, can be significant wherever the population is considerable and in market places in particular. At the beginning of an influx, overall hygiene is usually poor; as a consequence, rodents and other pests may swarm very rapidly.

Food is often distributed to refugees in metal cans. How these are disposed of once emptied should be given particular consideration, not only for aesthetic reasons but also because of health hazards (injuries to children, potential breeding sites for mosquitoes, etc.). Besides, this kind of garbage is far from being biodegradable.

Medical waste (used syringes, contaminated bandages and laboratory specimens) generated by refugee clinics/hospitals are of the same nature as those generated by any other health care centre, and particularly constitute a danger in a refugee camp where access to medical sanitary services is not always controlled in a systematic manner.

2.4 Drainage

This aspect of environmental sanitation is not always considered in due time, i.e. from the very start of the settlement of refugees at a given site. In fact, drainage should be assured whenever there is water stagnating around water distribution points, rainwater, wastewater originating from various sources (latrines, showers, kitchens, etc.) and could also involve measures related to the control of vectors through elimination of ponds.

Related problems can become complicated in a very short period of time and not permit any corrective measures to be taken once shelters and other infrastructure have been built.

The initiative in this respect is often left to the community. Families manage to take wastewater away from their homes and use it, possibly to irrigate vegetable gardens close by. Such initiative is indeed to be encouraged but, at the same time, streamlined through an overall sanitation programme for the site.

2.5 Vector control

Even more than for other sectors, it is essential to make a cost/benefit analysis or, better, a cost/effectiveness analysis when it comes to the implementation of programmes aimed at controlling vectors of public health importance or whenever an evaluation of such programmes is to be undertaken.

Whatever the nature of nuisances and pests, one notes a strong tendency to have systematic recourse to chemical control by means of pesticides (insecticides, rodenticides, molluscicides, etc.). Such products are costly and toxic to both human beings and the environment. Poisoning is to be feared during the transport, storage, handling and of course spraying of the chemicals. Resistance can be induced among the pests concerned as well as among non-target organisms.

Yet it is well known that the environment could and should be "manipulated" or "altered" for vector proliferation to be controlled on a lasting, if not a permanent, basis. Measures regarding the manipulation and modification of the environment are unfortunately less spectacular than insecticide spraying operations. Moreover, community involvement is a prerequisite for the success of such activities; community members are therefore to be sensitized accordingly. Last but not least, sanitation teams responsible for the maintenance of systems related to drainage and waste disposal have to be set up.

2.6 General hygiene

General hygiene, as a component of environmental sanitation, is also mentioned for it involves specific considerations. As a matter of fact, habitat hygiene, food hygiene and personal hygiene, while being integral parts of environmental sanitation, are more a matter of health education and community sensitization than of sanitary engineering as such.

It is nevertheless worth underlining that education in general and health education in particular are to be sustained by visible and concrete activities in the field - what sanitary engineering precisely aims at. As for community participation, it will remain only an interesting concept as long as the community is not provided with the necessary resources - human, institutional and material - for its members to be able to assume their responsibilities in this domain.

3. Practical approach

As can be seen from the above, environmental health in refugee camps constitutes a field where intervention goes far beyond what is usually meant by sanitation. In fact, the latter has become associated with the construction of latrines, which is detrimental to general understanding of the inseparable links between health, drinking water supply and the physical environment of people. Much misunderstanding would be avoided if the term "environmental sanitation" were used instead of "sanitation".

The improvement and/or protection of that environment will have a significant impact on health if, and only if, related activities are planned, implemented and monitored in an integrated and overall approach. Necessary means (including training of personnel) are also to be provided to the community concerned so that it can rapidly take over responsibility for the operation and maintenance of the systems built up.

3.1 Water quality

3.1.1 Water catchment

Whenever possible, a source allowing distribution by gravity and requiring no treatment should be tapped (springs with good yield are typical examples). Sanitary protection for the catchment must be compulsory, including fences to define both close and remote protection perimeters. Distance between the source and the users must be reasonable if an acceptable cost/benefit ratio is to be obtained.

3.1.2 Treatment

The use of chemical reagents such as alum and chlorine by-products is often recommended, although a sound study of potential operational problems should be made in advance. Moreover, the efficacy of those chemicals depends on various parameters, analysis of which has to be done by specialists before any decision is taken.

- Water purification can be obtained through physical treatment processes such as sand/gravel filtration, settling and aeration. These technologies should always be considered so as to avoid the sole use of chemicals.
- When deemed necessary, disinfection should be done on a case-by-case basis. An operation focused in space and in time has generally proven to be more efficient, less costly and easier to monitor than a regular and systematic one related to all water sources at a given site. It is also of paramount importance to underline that water disinfection can temporarily eliminate some contaminants but never eliminates the causes of contamination. Identifying those causes and eliminating them seems more rational and is always cost-effective in the long term.

3.1.3 Preventive maintenance

Some basic measures contribute to reducing wastage, thus safeguarding the quantity of water provided. Moreover, such measures help to maintain its initial quality. Among these the following can be listed: availability of spare parts, repair network equipped with skilled staff and tools, and users sensitized to the question and willing to participate in maintaining a

sanitary environment around all water points. The procurement of adequate containers for water collection and storage at home is also to be considered when it comes to preserving both water quantity and quality.

3.2 Excreta disposal

The design of sanitary facilities should be governed by at least five main considerations, as follows:

3.2.1 Flies and odours

Solutions to reduce such drawbacks are numerous but are to be chosen judiciously. They include: a vent pipe topped with an anticorrosive screen; fabrication of compost in double dry pits used in alternation (which implies that urine is collected and treated separately); covering faeces regularly with ash, etc.

3.2.2 Flooded pits or collapsed walls

Raised superstructure, drainage, pit lining, properly built base and mound, etc. This is in fact a matter of following fundamental engineering principles which are sometimes superseded by other considerations (financial or political factors, for instance). A large number of latrines built within a very short period of time and at minimum cost does not necessarily solve environmental problems.

3.2.3 Life span

To dig a pit to dispose of this type of waste is not a very exciting exercise. Normally, the pit should not be full within two to three years. If its dimensions have not been properly calculated, people will have to dig a new pit at short intervals; community members will be reluctant to repeat such an exercise, which is quite understandable. The site will be covered with pits, some of them containing faecal matter which is not yet stabilized and therefore is hazardous to human health. In addition, space is frequently lacking and this contraindicates an excessive number of super structures being built in the camp area. As noted above, too often quantity takes precedence over quality.

3.2.4 Privacy

Two levels are to be examined in this respect. Firstly, privacy at the community level: while water points are usually places where people gather and discuss various aspects of their daily life, sanitary facilities are rather to preserve users' privacy. It is well known that communal installations are rarely clean and become out of order within a very short time; they are reduced to being places favouring transmission of diseases. That is the reason why family latrines should be preferred whenever possible. Secondly, privacy at family/individual level: in most cases sociocultural considerations make it compulsory to build separate units for men and women. Moreover, cubicles should be partitioned off within each toilet block. Disregard for these simple criteria might lead to misuse and abandonment of facilities.

3.2.5 Location

The triangle shelter/latrine/well is important to consider since its dimensions may vary with the physical characteristics of the area (topography, soil conditions, water table, etc.). Latrine location must in any case satisfy the following:

- Groundwater pollution must be nil or at a minimum;
- Latrines must be close enough to users' shelters to encourage their use;
- They must be far enough away to prevent potential odours and pests from harming the population.

3.3 Solid waste

Storage: Metal drums could generally be used as refuse bins for garbage storage at individual dwelling level. Building of concrete structures for that purpose is neither economical nor very practical; when not regularly emptied such places can give rise to nuisances; rodents, for instance, have easy access to garbage and it becomes impossible to avoid the dispersal of garbage all around.

Collection and transportation: Camps located in the vicinity of a city have the possibility of benefiting from existing refuse-dump services. The utilization of tractors with trailers is costly and should be examined as the last option and considered only for large and densely populated camps. Wheelbarrows and/or carts (hand- or animal-drawn) are among variants which are often more appropriate.

Disposal and treatment: Sanitary landfill remains the most advisable method. It can be done in trenches or pits but individual operation is to be avoided.

Incineration is justified on a small scale only and for medical waste in particular.

Composting is quite an attractive technology which nevertheless requires, at minimum, monitoring and scientific knowledge, which is not always available in refugee camps. Moreover, sorting of garbage is to be organized if good compost is to be obtained. This treatment process could and should be considered for rural settlements where agricultural activities are foreseen.

3.4 Wastewater drainage and treatment

3.4.1 Areas of concern

Highest priority is to be given to:

- Drainage around points for collecting and distributing drinking water. Wastewater should be used to irrigate vegetable gardens and fruit trees.
- Sanitary facilities such as showers, toilets and washing areas.
- Shelters: Household members usually manage to protect their shelters from run-off waters by means of perimeter drains. It is nevertheless important to ensure that the water is collected and disposed of through a main drain before reaching natural receiving bodies.

3.4.2 Treatment

Treatment of wastewater is sometimes necessary before it is ultimately disposed of. This is often the case when the site is supplied with a sewer network that collects effluent from pour-flush toilets. Some treatment package units are available on the market, but their cost is usually prohibitive and their level of sophistication results in operation and maintenance problems that cannot be dealt with by the human resources to be found locally.

The fact remain that a large range of technology is available in the domain. Sanitary engineering professionals are to be consulted before decisions are made on the most appropriate technology to be applied to a specific case.

3.5 Vector control

3.5.1 Physical control

Measures described in the paragraphs dealing with excreta and waste disposal as a means of contributing to environmental sanitation will undoubtedly have a positive impact on the control of pests, flies and rodents particularly. The elimination of stagnant water and other breeding/resting sites for mosquitoes through drainage is also to be seen as a complementary measure. Needless to say, maintaining the drainage network in permanent working order is fundamental in this respect.

3.5.2 Chemical control

Insecticide spraying carried out on a routine basis is to be avoided and any related programme should be consistent with the rules and procedures in force in the host country. Advice from specialists, medical entomologists particularly, is to be sought to minimize risks and to maximize the impact on target species.

Staff assigned to such tasks must be trained in technical aspects, informed about health hazards linked with handling and spraying of pesticides, and protected by means of adequate clothing (mask, boots, gloves, etc.).

The use of rodenticides should always be adopted in agreement with medical staff. It has to be recalled that rats are favoured carriers of vectors of bubonic plague and fleas of murine typhus. That is why, especially in areas where these diseases are suspected, measures against fleas should take precedence over those against rodents, because the fleas leave rats' dead bodies and then become more aggressive to human bodies.

3.6 Family and individual hygiene

It is obviously insufficient that activities aimed at improving the living conditions of people are restricted to one level only, i.e. that of the site concerned.

Elementary rules regarding hygiene are to be observed by both families and individuals. In this respect, three requirements are considered essential:

(a) Avoid overcrowding and overpopulation as they are propitious to transmission, through direct or indirect contact, of either nuisances or diseases brought about by vectors such as fleas, lice, etc.;

(b) Reduce faecal/oral transmission risks through systematic handwashing before cooking and eating;

(c) Make provision for facilities aimed at the promotion of clothing and body cleanliness, such as showers and washing basins/areas. This will also reduce prolonged physical contact with water bodies that have been polluted by excreta, which favours, *inter alia,* the spreading of schistosomiasis.

4. Implementation constraints

4.1 Establishment of priorities

Setting up priorities is not a simple exercise. A very common example is that of an emergency situation when a significant number of people seek refuge in a given site and, within a few days, the refugee population reaches thousands of persons. It is understandable that immediate assistance is focused on the provision of basic needs such as shelters, drinking water and food. Environmental sanitation is then considered as a question which can be raised at a later stage: this is a mistake.

As a matter of fact, it has proven excessively difficult, if not impossible, either to reorganize the site through a new layout (the absorption capacity of nature having been overestimated and the necessity to build sanitary facilities recognized only subsequently), or to transfer people to another site, environmental health hazards having been assessed as too high at the previous one.

In other circumstances, building of sanitary facilities has been undertaken without (a) previous assessment of sociocultural habits of the newcomers or (b) a preliminary study of operation and maintenance of the structures. Sanitary engineers are approached only after problems have materialized and may have become so complicated that it is no longer possible to adopt simple and low-cost solutions.

While recognizing that, in emergency situations, priority is to be given to the provision of basic needs as stated above, one should bear in mind that preventive measures leading to a healthy environment are an intrinsic part of those basic needs. If this environmental aspect is overlooked, it is most likely that the living conditions of refugees will remain poor and the classical picture of diseases will be depicted, namely gastroenteritis, respiratory infections and helminthiasis, not to mention cholera and typhoid.

4.2 Resources

The amount and/or utilization of resources proceed from what was said above: (a) At design/planning/supervision level, professionals in the domain are not numerous, therefore sanitary aspects are dealt with by the specialists (architects, hydraulic engineers, medical doctors, etc.) who are available at the moment. (b) At the execution level, sanitation staff, already insufficient in number, are assigned to tasks such as immunization, census taking, and health education.

It still remains a challenge to convince communities (from the decision-makers to individual member of the public) that an environmental sanitation project deserves as much consideration as any other project aimed at providing well-being to community members. Firstly, the success of the project largely depends on community acceptance and participation, which cannot be obtained as easily as for projects dealing, for instance, with drinking water supply, shelter construction, and distribution of food and non-food items. Secondly, such a project must provide a strong justification to attract funding organizations. It is only in the long run that its impact on health can be assessed and its outputs quantified.

4.3 Intervening bodies

From the government side, in most cases the sanitary engineering department is to be either strengthened or built up. Solving problems related to environmental hygiene falls within the responsibility of various ministries. The coordination of actions and the decision-making process are therefore complicated.

Some nongovernmental organizations (NGOs) specializing in the health sector intervene in sanitation, for example latrine construction and/or vector control insecticide spraying. Those dealing with water supply are not always concerned with the problem of used water; they might be interested only in ensuring that water points are well drained.

To find an agency willing to solve problems related to the disposal and treatment of wastewater and sewage and also that of solid wastes, and having the necessary skills, remains a problem in itself, due to the fact that NGOs specializing in sanitary engineering are not numerous at either national or international level.

5. Conclusion

The field of environmental hygiene is vast and complex. Refugee camps deserve as much if not more attention than other human settlements. This attention must nevertheless focus on sectors more consistent with the sociopolitical context of refugee situations on the one hand, and more relevant in the light of physical constraints (both time- and space-wise) on the other.

To supply water not only sufficient in quantity but also acceptable in quality, to ensure proper disposal and adequate treatment of liquid and solid wastes, to control vectors of public health importance, to promote individual and community hygiene: those are the main activities recommended if a healthy environment is to be established and maintained. The impact of these measures will be reduced if they are implemented separately. However, a global approach, while desirable, requires both resources and decision-makers' willingness.

The challenge consists of convincing beneficiaries, as well as political and technical decision-makers, that the health of the human being can be reached only through the health of the environment.

6. References

1. Nquven Dan Duc: Vietnamese composting toilet (double septic bin), 1979.
2. Krisno Nimpuno: The Vietnamese toilet: appropriate technologies. Vol. 7, No. 4, 1981.
3. Winblad, U. and W. Kilama: Sanitation without water; MacMillan, 1985.
4. Toole, M.J. and Waldman, R.J. An analysis of mortality trends among refugee populations in Somalia, Sudan and Thailand. WHO Bulletin, 66(2): 237-247, 1988.
5. Feachem, R.C., et al. Sanitation and disease: Health aspects of excreta and wastewater management. World Bank studies in water supply and sanitation 3, John Wiley & Sons, 1983.

Training and information exchange on environmental health management in refugee areas

P. Kurttio

Executive summary

In order for training and information exchange on environmental health management in refugee areas to be effective and of relevance, the following are required:

- Appropriate research, to pinpoint the vital needs of refugees, through epidemiological methods and surveillance;
- Training to enhance exchange of information and facts that can be applied in the management of the health environment of refugees. In the absence of a well-planned settlement for refugees, the effects of an unhealthy environment magnify refugees' suffering, with high morbidity and mortality rates from otherwise easily preventable diseases.
- Most importantly, the participation of the refugees themselves, using simple appropriate technology is highly desirable.
- Full utilization of the family which, as in all communities, is the best functioning basic unit: tasks such as maintenance of rubbish pit, latrine, compound, home cleaning, etc., is best done by family units.

1. Introduction

A glimpse of the environmental health requirements of a refugee population shows these to be basically the same as those of a stable population; however, differences arise from the peculiar situations in which refugees, and displaced persons, often find themselves, with less control over their affairs than stable populations enjoy. They are victims of disasters which Emergency Preparedness and Response (EPR) should address.

The specifics of water supplies, waste and refuse disposal, shelter, food and personal hygiene, vermin and vector control, are not dealt with here. The emphasis is on *management* of (a) training and (b) promotion of a healthy environment in refugee communities.

2. Justification

The following observation from M.J. Toole and R.J. Woldman, in their paper; "An analysis of mortality trends among refugee populations in Somalia, Sudan and Thailand," throws some light on the extent of the problem [1]. Acute respiratory infections, diarrhoeal diseases, malaria, measles and undernutrition were the causes of most reported deaths, the majority of which could have been prevented by provision of adequate food rations, clean water, measles immunization, and an oral rehydration programme.

In a broad sense, environmental health management has three major objectives:

A. To keep at bay diseases propagated by a poor environment, by controlling:
   - person-to-person contact, droplet infection, etc.;
   - faecal/excreta-associated diseases;
   - vector-borne diseases; and
   - air, e.g. smoke-related pollution.

B. To minimize nuisances e.g. odours, bed-bugs, cockroaches, etc.

C. To promote adequately comfortable living conditions, e.g. shelter against weather extremes, etc.

3. Planning

A healthy environment will depend on a number of factors, e.g. population density, camp site, and community participation, including willingness to learn and participate in maintenance activities. All this should be incorporated into the planning process from the very beginning and as part of rapid assessment. The following list of questions may prove valuable [2] (see Appendix 1).

4. Strategies

Based on findings from the assessment, an appropriate plan of action can be designed, depending on current technical knowledge, to meet the three objectives mentioned above. Tables 1-3 in Appendix 2 summarize strategies on infectious diseases.

5. Comparison

Two communities of refugees can be compared. In one example, P. Shears, et al., describe the epidemiological assessment of health and nutrition of Ethiopian refugees in camps in Sudan, 1985 [3]. High mortality and morbidity were related to the state of malnutrition and environmental factors (see Table 1 hereunder). Any large, unplanned, sudden migration of

refugees is almost always associated with shortages of food, water, shelter, etc. In a space of only three months, one camp nearly doubled its population, i.e., from 65 000 to over 100 000.

TABLE 1. **Morbidity and mortality in under-five refugees**

DISEASE	ATTACK RATE (CASE/1000)	CASE FATALITY RATE
Diarrhoea	130	19:1
Measles	97	3:1
Malaria	112	68:1
Chest infections	63	39:1

In comparison, Burundi refugees who fled to Tanzania were assigned a large piece of land for development - villages and peasant agriculture. The chosen sites facilitated well-planned community services, which lessened environmental problems. As a result many of the refugees opted for permanent stay, and later on were granted citizenship [4].

6. Training and information dissemination

Training could be defined as the purposeful, planned, methodical, systemic development and dissemination of essential information, knowledge, attitudes, behaviours and skills.

"Purposeful" implies careful planning. Because training disseminates information/ knowledge, it follows that this is one of the first and major stages in introducing or reinforcing any idea in a community, such as Emergency Preparedness and Response (EPR).

6.1 Why training for EPR?

There are very few WHO/AFRO or WHO/EMRO Member States with an up-to-date mechanism for Emergency Preparedness and Response. Therefore, the overall aim is to assist Member States develop their own EPR programmes, putting to best use all available local resources.

Specific objectives should include:

(1) stimulation and activation of the national political leadership towards EPR;
(2) planning and institutionalizing EPR activities by national officers;
(3) mobilizing the district network down to the family unit, taking care to fit all units into the existing framework (horizontal structural planning).

In addition, the causative factors of situations involving refugees and displaced persons need to be known in order to prevent and/or mitigate their effects. Drought, famine and war are by far the major causes of displacement of persons.

6.2 What levels of training?

There are basically three levels:

(1) national leadership (policy level)
(2) national executives (implementers)
(3) district executives (operation)

6.2.1 National leadership - training and information

This level of training involves increasing awareness among the policy-makers. The outcome should be to provide the EPR programmes with the legal mandate and political approval in order to become fully functional. The WHO Pan-African Centre for EPR plays an important role of documenting and dissemination of appropriate information, in collaboration with others such as the Organization of African Unity (OAU). To this end, the OAU Health Ministers' Conference of May 1989 at Kampala, Uganda, underscored the importance of EPR by passing positive resolutions on the OAU Secretary General's EPR report.

Similarly, the April 1990 Addis Ababa high-level meeting for the OAU/UN system examined the issue of the health of refugees and displaced persons.

Furthermore, the UN General Assembly declared the 1990-2000 to be the International Decade for Natural Disasters Reduction. Relevant guidelines for governments are in circulation.

6.2.2 National executives

This level of training is geared toward creating mechanisms for planning, structural organization, implementation and evaluation. An international course for anglophone states was held in Addis Ababa in 1989. Two subregional and country workshops were also held.

6.2.3 District executives

The objective at this training level is to galvanize individual communities and families to develop abilities to deal with disasters. The most timely preventive and mitigative actions should come from within the affected community or immediate neighbours. It is imperative to seek the opinions of the community, be it the refugees themselves or the host community. (See Table 2 hereunder.)

TABLE 2. **Training refugees as primary health care (PHC) workers**

RELATING TO	PROBLEMS	PROBLEMS SOLUTIONS/ IMPROVEMENTS
Expatriates or foreign organizations	Attitude of expatriates and health professionals	Reorientate health professionals, planners and agencies to the PHC approach
	"Emergency" thinking of expatriates	Train the professionals and expatriates
	Inexperienced expatriates Too many expatriates High turnover of expatriates	Careful selection Do not rely on expatriates Use of expatriates as supervisors
	Organization of NGOs	Increase inter-agency communication
Resources	Lack of funds and incentives for PHC workers	Reallocate funds for salaries or give "food for work"
	Lack of resources for health education messages	Support health education with funds to improve camp conditions
	Lack of personnel: - appropriate trainers - illiterate/educated refugees	Train the trainers Combine language training with training in health care
	Lack of appropriate literature	Allocate funds and define necessary literature
	Lack of time due to demands of curative work	Assign senior person/team to work solely on training and preventive health care
Host government	Not oriented towards PHC or community involvement	Ideally host government should initiate PHC; possible promotional role for UN agencies
Refugees	Different language, culture, traditions and religion	Use of refugees as teachers Involve community in planning and selection of trainees
	Unstable, insecure	Explain the importance of PHC
	Lack of sense of "community"	Better briefing of expatriates about culture and way of life in both refugee community and host country

TABLE 2. **Training refugees as primary health care (PHC) workers (cont.)**

RELATING TO	PROBLEMS	PROBLEMS SOLUTIONS/ IMPROVEMENTS
Training	Introduced too late	Start in very early stages of camp
Programme	Inappropriate teaching	Keep curriculum short,task-oriented to priority problems; build on what the refugees know; use standard syllabus; respect the refugees' culture. Increase PHC approach component; train in small groups, at a time convenient to refugees
	Choice of trainees; loss due to resettlement; young workers not respected	Take time over selection Involve community
Others	Demand for curative services	Start preventive medicine early, not as an alternative to curative medicine
	Lack of supervision	Provide continuous support and encouragement to PHC workers once trained
		Give PHC workers specific tasks to do and add other tasks later if first ones are done according to set standards

Source: Disaster 9/1/1985

6.3 What should training achieve?

In the long run, training should enable states to have well-run EPR programmes, capable of deploying the early warning systems, public information and education, and of mobilizing all available resources for relief, rehabilitation and development, within the framework of existing structures. It is needless to emphasize that the EPR teams at both national and district levels must be multisectoral.

6.4 How can EPR training be evaluated?

In evaluating EPR training, the following questions must be answered: How many people in the country have been trained or informed? What is the response in terms of activities and performance? The training should also be evaluated in terms of its cost and the resources used.

Lastly, the level of involvement and interactions of governmental, inter- and non-governmental bodies greatly influence the outcome.

7. References

[1] Toole, M.J. and Waldman, R.J. An analysis of mortality trends among refugee population in Somalia, Sudan, and Thailand; WHO Bulletin, 66(2), 237-247, 1988.

[2] Simmonds, S., Vaughan, P. and Gunn, W. Refugee community health care, 1985. Oxford Medical Publications.

[3] Shears, P., et al. Epidemiological assessment of the health and nutrition of Ethiopian refugees in emergency camps in Sudan, 1985. British Medical Journal Vol. 295, 1987.

[4] Christensen, H. Refugee pioneers: history and field study of Burundian settlements in Tanzania.

[5] Mullick, M.A. Socioeconomic aspects of rural water supply and sanitation. The Book Guild Ltd., Lewes, UK.

[6] WHO/EPR Pan-African Centre, Addis Ababa. Health-for-all when disaster strikes, Issue No. 1, 1989.

8. Useful reading

- EPC Refugee Health Group. A collection of publications. London School of Hygiene and Tropical Medicine.
- Simmonds, S. and Dick, B. Training refugees as PHC workers. Disaster, 9.1.1985, pp. 61-69.
- Water Resources Development Authority, Ethiopia, 1984. A report on environment health status in the irrigated agricultural areas of the Awash Valley. A report on environment health status in the Weito Irrigation Project.
- WHO Pan-African Centre for Emergency Preparedness and Response, Addis Ababa. Health aspects of refugees, displaced persons and emergencies, 1990.

Appendix 1
Training in environmental health in refugee areas

1. National level

What are the main characteristics of the host country, e.g. size, population, ethnic groups, languages, religions, geographical (including climatic features), etc.?

What is the policy of the national government towards refugees?

What are the main health and disease problems of the host country?

2. Refugee community

What are the main geographical, transport, and communication features of the area?

What is the environment like and what is the camp layout?

Where have the refugees come from? What sort of environment was it?

Where have they passed through?

What is the estimated total population?

What are the main ethnic groups, languages, and religions?

What is their political structure? Who are their leaders?

What degree of refugee community involvement is there?

How much self-sufficiency and self-reliance is there?

3. Cultural and socioeconomic factors

Within the refugee community are there any particular customs, beliefs, traditions, values, or laws that will influence the type of health care provided?

4. Shelter

What is the most culturally acceptable form of housing for the refugees?

Is overcrowding an obvious problem?

How much space is there for each household or family?

How many people live in each hut or tent?

Is there a possible link between the housing conditions and the most prevalent diseases?

If tents are used to live in and there is a cold season would ground sheets be culturally acceptable?

5. Clothing

Do people have an adequate change of clothing?

6. Accidents

What are the most common accidents?

Is there a strong possibility of fire? What means are available for quickly extinguishing a fire?

7. Education

Is there a policy to provide primary and adult education?

8. Community health services

Who has overall responsibility for the provision and supervision of health services in the refugee community and in the local region? What is thought and expected of the services?

Is there an unusually high incidence of communicable diseases? Which ones are notifiable? Which are common in the refugees' homeland?

Is there a demand/need for more soap?

If malaria is present, which species of parasites are prevalent and is there any drug resistance? What is the seasonal pattern of transmission?

Would regular informal training/discussion sessions amongst the trained staff be useful?

9. Vector control

What are the most common disease vectors, e.g. rodents, mosquitoes, flies, fleas, lice, etc.?

What environmental conditions affect the breeding and survival of these vectors, e.g. seasonal variations, temperature, rainfall, water, and sanitation facilities?

What vector control measures are being used?

10. Nutrition

How is food prepared, cooked and eaten? Is there adequate fuel for cooking purposes? What are the eating habits of the families?

What are the provincial and refugee community food storage facilities? Is the food stored properly? How many days' supply can be stored?

11. Environmental health

11.1 Water supplies

Is there any one official body responsible for the water supply of the refugee community, e.g. local authority?

From where does the community get its supply, e.g. from a river, tanker, stand-pipe, well, etc.?

Are all members of the community able to obtain a reasonable quantity of clean water near their homes?

Are the refugees involved on a community basis with any aspects of water supply?

Is the water supply adequate in quantity during all seasons?

Have bacteriological and chemical checks been carried out to determine the quality of water?

Is there any danger of contamination of the water supply from livestock, human excreta, or refugee communities upstream?

On average, how many litres of water are used per person per day? Is the amount increasing or decreasing? What factors are involved?

How is the water carried, stored and used at home and in the clinic?

Does the community relate certain diseases or symptoms to polluted or insufficient water?

Is there a problem with poor drainage of water?

Is there any evidence of water-related diseases, e.g. skin or eye disorders, malaria, typhoid, cholera, diarrhoea, etc.?

11.2 Sanitation and refuse disposal

What is the most culturally acceptable method for the disposal of human excreta?

Is indiscriminate defaecation common and is it being done too close to water sources or homes?

What other disposal systems exist, e.g. family or communal pit latrines, bucket systems, water flush sewerage, etc.?

From a spot check are these systems:

- Culturally acceptable?
- Being used and if so by whom?
- Ensuring privacy for the users?
- Being maintained properly?
- A health hazard?
- Sufficient in number?

Are separate facilities required for each sex?

What is used for anal cleansing, e.g. sand, water, corn cobs, stones, etc. Are materials and space available for building more latrines?

Are engineers required to help mend broken sewerage and/or water mains pipes?

Is there any evidence of a high level of disease or symptoms that may be related to poor sanitation practices, e.g. diarrhoea, health infections?

How are used syringes and needles and soiled dressings disposed of?

What system is there for the regular collection and disposal of refuse?

Are there regular camp clean-up campaigns?

What type of soil is the camp sited on?

How deep is the water table? Does the depth vary considerably in different seasons?

12. Training health workers

Are there refugee health committees and community health workers?

What categories of formally trained health staff already exist amongst the refugees?

Is there a need for a training programme for selected members of the community? What type of training programme is envisaged?

What is the government's attitude to a proposal to commence training in the camps?

Are any similar training programmes being run in the country of asylum or in the refugees' homeland, from which lessons can be learned?

What skills do the health workers need?

How would they be chosen?

Would basic literacy be a necessary prerequisite?

Would they be paid a salary, be voluntary, or on a food-for-work programme?

What form would the training take regarding length, content and method of assessment?

Would it be single or multipurpose?

What ratio of male-to-female workers would there be? Would there be any tasks for which females are better suited than males and vice versa?

Would there be any formal recognition for having undertaken such training?

To whom would the workers be directly responsible?

Who would supervise them?

What opportunities would there be for further in-service training?

Appendix 2
Strategies on infectious diseases

TABLE 1. **Various ways of transmission of water-associated diseases**

	CLASS OF DISEASES	WAY IN WHICH TRANSMITTED
1.	Round-whip-worm, hook-worm, paratyphoid fever, bacillary dysentery, trachoma	poor sanitation/water scarce/ water-washed, due to lack of water, improper waste disposal, poor personal hygiene
2.	Cholera, infectious hepatitis, typhoid, amoebic dysentery	Water-borne (water acts as vehicle)
3.	Schistosomiasis, Guinea worm	Water-based (where the life cycle of the agent starts)
4.	Malaria	Water-related (where breeding starts in water)

NB. Water-borne infections may also be water-scarce or water-washed.

White, Bradley, and White in 1972 estimated that, overall, approximately 52% of water-associated diseases could be eliminated in rural areas of East Africa by the improvement of water supplies.*

* Saunders, R.J. and Warford, J.J. Village water supply and sanitation in less developed countries. World Bank Report RES 2, March 15, 1974, p. 49.

TABLE 2. **Main infectious diseases in relation to water supplies**

CATEGORY WATER	DISEASE	SEVERITY	CHRONICITY	% REDUCTION BY IMPROVEMENTS
Ia	Cholera	+++		90
Ia	Typhoid	+++		80
Ia	Leptospirosis	++		80
Ia	Tularaemia	++		40?
Ib	Paratyphoid	++		40
Ib	Infective hepatitis	++	+	10?
Ib	Some enteroviruses	+		10?
Ia, IIb	Bacillary dysentery	+++		50
Ia, IIb	Amoebic dysentery		++	50
Ib, IIb	Gastroenteritis	+++		50
IIa	Skin sepsis and ulcers	+	+	50
IIa	Trachoma	++	++	60
IIa	Conjunctivitis	+	+	70
IIa	Scabies	+	+	80
IIa	Yaws	++	+	70
IIa	Leprosy	++	++	50
IIa	Tinea	+		50
IIa	Louse-borne fevers	+++		40
IIb	Diarrhoeal diseases	+++		50
IIb	Ascariasis	+	+	40
IIIa	Schistosomiasis	++	++	60
IIIb	Guinea worm	++	+	100
IVa	Gambian sleeping sickness	+++	+	80
IVb	Onchocerciasis	++	++	20?
IVb	Yellow fever	+++		10?

Source: Water, sanitation and health, WHO Report No. EM/RC30 (81). Tech. Disc.1 (1981) Table 4, p. 42. WHO Eastern Mediterranean Regional Office, Alexandria, Egypt.

The main infectious diseases in relation to water supply are indicated in Table 2 (above). It will be seen that it is very costly to remove 100% of water-borne or water-related diseases without sanitation.

TABLE 3. **Potential health improvement related to sanitation and personal hygiene**

INFECTION	DOMINANT TRANSMISSION	SANITATION ALONE	PERSONAL HYGIENE ALONE	OTHER IMPORTANT INPUTS AND MAJOR CONTROL MEASURES
1. Enterobiasis, amoebiasis, giardiasis	Focus Personal Domestic	Negligible	Great	Domestic water supply; health education; improved housing; provision of toilets.
2. Typhoid cholera salmonellosis shigellosis	Personal domestic water crops	Slight Moderate	Moderate	Domestic water supply; health education; improved housing; provision of toilets; treatment prior to discharge or reuse.
3. Ascariasis trichuriasis hookworm	Yard Field	Great	Negli-gible	Provision of toilets; treatment of excreta prior to land application
4. Taeniasis	Yard Field Fodder	Great	Negli-gible	Provision of toilets; treatment of excreta prior to land application; cooking; meat inspection
5. Schisto-somiasis gastro-discoidiasis fascioliasis clonochiasis metagonimiasis	Water	Moderate	Negli-gible	Provision of toilets; treatment of excreta prior to discharge; control of animal reservoir; cooking
6. All above listed infections for which flies and cockroaches can be vectors	Faecally contaminated sites	Slight Moderate	Negli-gible	Identification and elimination of breeding sites

Source: Feacham et al.
Appropriate Technology for Water Supply and Sanitation, John M. Kalvermatten, De Anne S. Julius, and Charles G. Gunnerson. World Bank, Washington, D.C., December 1980, pp. 19-21.

The authors concluded that 58% of factors giving rise to improved health arise from sanitation and personal hygiene. The remaining 42% may be attributed to improved water supply and excreta disposal, proper provision of toilets, and health education.

Refugees in WHO's Eastern Mediterranean Region: The role of the Eastern Mediterranean Regional Office in health aspects and coordination with other international relief agencies

M.A. Elmi

1. Introduction

The Eastern Mediterranean Region (EMR) of WHO is regarded as an area prone to disasters of both natural and man-made origin and of both sudden and gradual onset. Emergency preparedness activity is only beginning in this Region but awareness of this problem in the health sector is growing in its Member States.

During the last few years the general situation in many of the countries of the Region has been alarming. For example, large-scale losses, both human and economic, were reported from the Islamic State of Afghanistan, Djibouti, Democratic Yemen, Islamic Republic of Iran, Pakistan and Sudan after floods. Earthquakes have also struck Islamic State of Afghanistan, Islamic Republic of Iran and Pakistan recently.

Man-made disasters have been a major cause of serious emergency situations in the Eastern Mediterranean Region in recent years, and they have prevented any amelioration within the health sector. Wars, civil strife and riots in Islamic State of Afghanistan, Islamic Republic of Iran, Iraq, Kuwait, Lebanon, Somalia and Sudan, as well as in the Occupied Territories, have caused the deaths of thousands and injuries to even more. They have wrought havoc among health sector facilities as well as housing and basic community services, including power and water systems. Violence has also led to enormous refugee or displaced populations in Islamic State of Afghanistan, Islamic Republic of Iran, Iraq, Kuwait, Lebanon, Somalia and Sudan.

Disasters do not only cause damage to the existing infrastructure but, especially in developing countries, they also prevent any improvement in services and facilities and are detrimental to the economy of the whole country for a long period. Therefore, being adequately prepared to face an emergency of any kind also means being able to continue development in the country with minimal disturbance.

The role of the health sector is of key importance in minimizing the deleterious effects of disaster upon a population. However, better results are achieved with adequate disaster-vulnerability analysis and careful planning for emergency preparation. This means

close cooperation with other sectors already in the preparedness phase, including prediction of emergencies, based on different types of early warning systems.

The Eighth General Programme of Work for the Eastern Mediterranean Region, adopted by the Regional Committee in October 1986, demands that a Regional Programme for Emergency Preparedness be formulated to facilitate timely response to emergency situations. The recommendations of the Workshop on Disaster Preparedness and Health Relief Management, held in Hammamet, Tunisia, in November 1988, also include the formulation of a Regional EPR programme.

By the end of 1988 two countries of the Region (Kuwait and Tunisia) had a national plan for emergency preparedness and response and six countries (Bahrain, Jordan, Kuwait, Qatar, Saudi Arabia and Tunisia) had plans for mass casualty management. Civil defence plans exist in most of the Member States, although in some cases the health sector is not included. However, the most populous and most disaster-prone countries of the Region still lack such plans. The type of disaster that is most probable must be emphasized in each case; nevertheless, the low probability of natural disasters in some countries could be misleading and cause underestimation of the need for emergency preparedness planning in the health sector. Also, technological accidents are possible in the least developed countries, as elsewhere. The following is an outline of the EPR Plan of EMRO; it covers health aspects and coordination with other international relief agencies during disasters.

2. Objectives

2.1 General objectives

Increasing awareness of the need for emergency planning and preparedness activities is of primary importance, at both country and WHO level. At country level, EPR in the long run should be implemented in primary health services.

Developing self-reliance and responsibility for immediate action after casualties have been sustained, by supporting the establishment or strengthening of an emergency preparedness programme in the health ministry in the Member States, is an essential aim of the programme for EMRO.

Targets are also to be set in terms of cooperation in the disaster-stricken country and between the different governmental and nongovernmental relief agencies, so as to provide maximal aid to the victims of a disaster, be it of natural or man-made origin.

2.2 Specific objectives

EMRO's target is to support Member States in formulating their national plans for the health aspects of emergency preparedness and management.

Designating a focal point in each country within the health ministry for emergency affairs is important for rapid communication and cooperation.

Developing an emergency information data collection system to allow rapid access to disaster-specific information and to provide a means of information exchange between the countries and WHO, and also between the countries themselves, is essential.

National experts should be trained in health relief management; a roster of Regional experts in EPR is to be developed and identified.

A Regional WHO Collaborating Centre is to be established.

A Regional emergency stock/store for use in disasters is also to be established.

3. Components and Major Activities

For practical purposes the programme is divided into ten different components; some overlapping is unavoidable, but this arrangement provides a clarified view of the programme as a whole. Great flexibility is allowed between the components.

3.1 Programme management

- To formulate and implement EPR strategies and policies in the Region, according to the Global Programme.
- To plan and supervise all health emergency preparedness activities in the Region at country, intercountry and regional levels, in cooperation with other agencies, governmental or nongovernmental, when necessary.
- To control and evaluate EPR activities in the health sector.

3.2 Support to national programmes

- To provide necessary technical and material assistance to the countries in formulating their national EPR plans.
- To assist the countries in establishing or strengthening an EPR standing committee at ministerial level in the health ministry.

3.3 Education and training

- To provide health officials of Member States with a common arena of training in disaster preparedness.
- To provide health and other officials involved in disaster preparedness, at the regional, national or institutional level, with a source of reference and training materials as well as with scientific support in emergency preparedness.
- To provide support for education of the general public in disaster preparedness.

3.4 Mass casualty management

- To assist health services in developing self-reliance and the first line of action in disaster situations and to help health services to draw up their plans for emergency preparedness, both on-site in mass casualty situations and in hospitals, using their human and material resources in the most effective way.

3.5 Training of environmental health professionals

- To provide technical support to national emergency preparedness planning in the field of environmental health in cooperation with other WHO programmes (e.g. EH, CWS, etc.).
- To strengthen collaboration with the WHO Centre for Environmental Health Activities (CEHA) in Amman, Jordan, in disaster preparedness and in evaluation of environmental health vulnerability.

3.6 Field assessment of health needs

- Participating in management and coordination of field operations in emergency relief.
- Special emphasis is given to strengthening of communications and information systems for better response to disasters; methods of assessment and evaluation will be improved. This will provide the relief decision-makers with better technical data in disasters and allow adequate, timely and appropriate response.
- National and regional experts will be selected and trained for disaster health relief work.
- Communications and information exchange with international agencies and donors will be strengthened under an emergency health coordinator for disasters.

3.7 Technological disasters

- Increasing awareness of technological emergencies in the Member States and providing support to them in special preparedness for such disasters, including public health implications and education of the public.
- Strengthening regional cooperation in this field by enhancing information exchange, including information on the effects of chemical compounds, and possibilities for achieving field experience in disasters.
- Facilitating cooperation with collaborating centres and special institutions.

3.8 Refugees and displaced persons

- Assisting in identifying the health problems and needs of refugees and displaced persons and contributing to the improvement of primary health care delivery for these populations.
- Providing technical assistance in training health personnel for refugees/displaced populations.
- Assisting in improving the health managerial skills of national workers, as well as those of international agencies and of local and expatriate volunteers.
- Providing the countries of the Region with appropriate information on health problems related to this field.

3.9 Cooperation with other regions

- Requesting consultant services on some special topics, such as building up national and regional expertise groups.
- Seeking collaboration in modification and translation of PAHO Emergency Health Manuals for appropriate use in EMR, and in other training and public education material.
- Exchanging EPR information through visits by EMRO EPR staff and national focal points to other regional offices or places of ongoing disaster in other regions.
- Participating in interregional and global meetings so as to benefit from innovations and new ideas and guidelines in the field of emergency problematics.

3.10 Cooperation with collaborating centres

- Increasing and strengthening cooperation with the various collaborating centres and seeking possibilities to widen the subjects of collaboration.
- Establishing a new collaborating centre within EMR.

4. Refugees in the Eastern Mediterranean Region

Migration of populations, either as displaced persons or as refugees, has occurred from the early ages of humanity in this Region. Several causes, be they natural or man-made, result in displacement of populations within their own country (displaced persons) or across national borders (refugees).

However, this has become an increasing problem during present times, due to the number of people involved, the decreasing resources available and the protracted time needed to reach agreement for the future of such people. It is to be noted that at present EMR has the largest number of refugees in the world.

Often, when disaster has struck, the few first days pass with the main effort going into medical emergency relief. After these first days the changes caused by the disaster to the environment, leading to changes or modifications in the human surroundings, will start to have effects on human life. In this later, post-disaster, phase, environmental health will become of main priority.

For refugees, the initial emergency phase requires immediate response to essential needs. These are: adequate food, water and sanitation, shelters, security and health care. If one of these priorities is neglected an appalling situation will result, with high morbidity and mortality rates. Thus, relief efforts for water supply, food, sanitation, shelter needs and camp planning will then exceed efforts for immediate emergency medical care. Today, countries in EMR whose people are either refugees themselves or hosting refugees are Islamic State of Afghanistan, Cyprus, Djibouti, Egypt, Iraq, Islamic Republic of Iran, Jordan, Lebanon, Pakistan, Somalia, Sudan, and Syrian Arab Republic.

5. EMRO's role in health aspects and coordination with other international relief agencies

The mandate of the World Health Organization stems from its Constitution, which states that one of the functions of the Organization shall be to furnish appropriate technical assistance and, in emergencies, necessary aid upon the request or acceptance of governments (Article 2.d); the Constitution authorizes the Executive Board to take emergency measures within the functions and financial resources of the Organization to deal with events requiring immediate action and to undertake studies and research on emergency problems (Article 28.i).

WHO acts as the directing and coordinating authority on international health work. This direction and coordination is provided by its Headquarters and six Regional Offices, as appropriate, in a coordinated manner.

WHO through its Headquarters, Regional Offices and Representatives, will furnish technical cooperation and emergency response as an integral part of the global strategy for Health for All and promote health emergency preparedness in its Member States.

WHO plans, coordinates and cooperates with other international relief agencies.

There is a Memorandum of Understanding between the World Health Organization and the United Nations Disaster Relief Coordinator (UNDRO). The activities in which WHO and UNDRO cooperate include: emergency preparedness and response, requests for disaster relief assistance, communications, financial arrangements and airfreight of relief supplies.

There is a Memorandum of Understanding governing collaboration and coordination between the United Nations High Commissioner for Refugees (UNHCR) and the World Health Organization. The areas of collaboration and coordination between WHO and UNHCR include the following:

1. Evaluation of the health situation in temporary settlements and their surrounding communities, particularly at the outset of an emergency situation.
2. Development of training material and training activities for the personnel responsible for the planning, management, and provision of health care to asylum seekers and refugees.
3. Development of standards and protocols for preventive and curative health care in line with the health policies and strategies of WHO, as endorsed by its Member States.
4. Development of applied research on technical and operational subjects, as required, with a view to improving international knowledge on specific issues resulting from large population movements.

UNHCR and WHO will jointly perform periodic field programming and missions to evaluate their activities related to the health status and health care of asylum seekers and refugees.

There is a Memorandum of Understanding between the Office of the Coordinator for Humanitarian and Economic Assistance Programmes Relating to Islamic State of Afghanistan and the World Health Organization; there are also Exchanges of Letters between the International Committee of the Red Cross (ICRC) and WHO, and between the League of Red Cross and Red Crescent Societies (LRCRCS) and WHO.

Environmental health management in refugee camps/settlement areas in the Eastern Mediterranean Region

M.A. Mullick

1. Introduction

Over the last two decades the refugee phenomenon has acquired a new dimension in terms of sheer magnitude and complexity in most Regions of WHO; the Eastern Mediterranean Region (EMR) is no exception to this human tragedy.

The World Health Organization's Eastern Mediterranean Regional Office (EMRO) is convening this first workshop at regional level on Environmental Health Management in Refugee Areas or refugee-related situations. A workshop with a similar theme but in general approach applicable to all types of natural and man-made disasters and emergencies was also held in Amman, Jordan, during December 1989. However, this particular workshop was specifically devoted to environmental health management in refugee areas and refugee-related situations.

The refugee problem is a man-made disaster. Many countries of the EMR face this human tragedy on a wide scale: the plight of Palestinian refugees in the Middle East, Afghan refugees in Pakistan and Islamic Republic of Iran, and Ethiopian refugees in Sudan and Somalia has imposed very severe strains on the social and economic policies of the host countries.

The refugee populations in the host countries usually bring with them their own original burden of health and social problems in addition to their immediate needs for food, shelter and clothing. There is no doubt that, generally, the international community generously provides assistance of all kinds to ease the stresses imposed on the national infrastructures of host countries. However, the question arises: How long can such assistance be relied upon? The host countries are always constrained and obliged to extend their own limited resources, financial as well as human, in order to redress the pitiful environmental health conditions generated by a huge influx of refugees and to contain them so that this may not aggravate their own prevailing poor environmental health conditions in the rural border areas where the refugees are camped.

Management of an influx of refugees, or of other refugee-related situations, requires careful pre-planning: that is the binding ingredient that allows material assistance to be correctly matched with needs. A vision of long-term possible solutions for the refugees, as well as attention to the local needs and conditions of the national population, must be incorporated into the initial planning. This requires continuous, skilful management, training and the setting up of institutional procedures and guidelines for action for the efficient management of environmental health services in refugee areas, in order to utilize meagre resources more effectively and in an orderly manner. It is hoped that the deliberations of this workshop will

provide an excellent forum for the exchange of different experiences concerning the environmental health problems faced in the refugee areas by various Member States and will recommend the necessary actions to be taken by national governments and international organizations in strengthening their coordination and in improving the efficacy of assistance.

2. Refugee situations in the Eastern Mediterranean Region

2.1 General

Islamic State of Afghanistan, Islamic Republic of Iran, Jordan, Lebanon, Pakistan, Somalia, Sudan, Syrian Arab Republic and Yemen are the countries of the WHO Eastern Mediterranean Region that have been involved recently in refugee or refugee-related situations. It is estimated that there are more than eight million refugees scattered throughout these countries.

They are continuously facing problems pertaining to relief, settlement and rehabilitation. The displacement of hundreds of thousands of poverty-stricken refugees and their relocation in neighbouring countries, all of which have a low budget for health administration and the environmental health sector, have created a serious imbalance in the countries' economy, already impeded by poverty and structural weakness.

2.2 Specific host countries

The situation analysis of refugees in various countries of the EMR where general development crises have been severely exacerbated by refugee problems is briefly as follows:

2.2.1 Islamic Republic of Iran and Pakistan - Afghan refugees

Afghan refugees represent a human tragedy probably unique in the annals of human conflict. About 50 per cent of the Afghan population has taken shelter in Islamic Republic of Iran and Pakistan and also within the country itself away from war zones. It is estimated that some six million people from Islamic State of Afghanistan have taken refuge in neighbouring countries: in Pakistan (3.5 million) and 2.5 million in Islamic Republic of Iran. Another 2 million are internally displaced [5].

Health care, as well as the environmental health situation in Islamic State of Afghanistan was always at a low ebb; the refugees in the host countries brought with them some health and socioeconomic problems. The Governments of Pakistan and Islamic Republic of Iran have established Refugee Commissions in their Ministries of the Interior for the provision of shelter, feeding and health care. In Pakistan alone the Afghan refugees are camped in 300 refugee villages/camps.

WHO, UNHCR and many NGOs are playing a great role by providing expertise and resources for health care and environments health management in the refugee areas.

A special UN programme of humanitarian and economic assistance, named UN "Operation Salam" was launched in 1988 for Afghan refugees. WHO EMRO is assisting in

developing Operation Salam's health sector programme which includes: epidemiological surveys and programme planning for disease prevention, treatment and control; restoring health facilities and their equipment; training health manpower; and re-establishing the logistic and supportive mechanisms required to sustain the restored health services.

It is to be noted that, recently, many Azerbaijani refugees from the former USSR also migrated to Islamic Republic of Iran.

2.2.2 Jordan, Lebanon, Syrian Arab Republic - Palestinian refugees

Palestinian refugees are scattered throughout various camps located in Jordan, Lebanon and Syrian Arab Republic. These camps are now well established; they have been looked after by UNRWA for the last forty years. Since UNRWA began operations in May 1950, WHO has been responsible for the technical direction of the Agency's health programme. The programme has always emphasized public health/environmental health and preventive medicine with limited curative services, training and health education. WHO's Centre of Environmental Health (CEHA) is also collaborating in imparting training to environmental health personnel working in the Palestinian refugees camps.

Initially the refugees were provided with tents and were without adequate sanitation facilities. At present, however, most people live in mud-brick or concrete block houses; the camps are overcrowded but living conditions are enhanced partly due to installation of latrines, septic tanks, private water taps and regular management and control of environmental health problems.

2.2.3 Somalia

It is estimated that more than 700 000 refugees are concentrated in four regions of Somalia: Gedo, Hiran, the Lower Shabelle and North-West Somalia, with a ratio of 1:7 of the total population displaced. This has resulted in a colossal burden on the health sector and on the country's economy and society and has been manifested in the general deterioration in both preventive and curative health care facilities. The risk of epidemics of communicable diseases is increased because of continuous movement of refugees. The situation worsened further due to inadequacy in water supplies even for the local populations living near the camps. Refugees who have migrated from Ethiopia are camped near Gannet Village; this area already lacks piped water supply and sanitation facilities, and as a result there were cases of cholera in Somalia. This is an example of one camp. The health situation and environmental health facilities in most of the camps are appalling.

UNHCR and the Somali National Refugees Commission, WHO and many NGOs are working unceasingly to strengthen national emergency preparedness planning and plans for the improvement of environmental health facilities in the refugee camps.

2.2.4 Sudan

Sudan, the largest country in Africa with a population of 25 million, is confronted with serious economic, health, and environmental health problems with displacement of about one million persons/refugees due to recent floods, droughts and civil war.

In general the provision of appropriate environmental health facilities in the country is inadequate; many communities do not have any such facilities. In such situations when disaster strikes the community, it is beyond the capacity of the authorities to provide basic environmental health needs for a huge number of displaced persons.

3. Environmental health problems in refugee areas in EMR

3.1 Environmental health problems

The most common environmental health problems generated in crowded areas or in refugee camps can be due to:

- Inadequate and poor shelter
- Inadequate water supply (in both quantity and quality)
- Lack of proper excreta disposal system
- Lack of proper refuse and solid waste disposal system
- Lack of proper drainage
- Poor food hygiene practices
- Improper control of insects and rodent infestation
- Lack of personal hygiene.

The above major environmental health problems in the refugee areas are probably the causes of transmission of the following groups of common diseases:

(a) faecal-related (intestinal parasitic and infectious diarrhoeal diseases);
(b) air-borne diseases (tuberculosis, pneumonia, diphtheria, bronchitis, whooping cough, influenza, measles, chicken-pox);
(c) vector-borne diseases (malaria, schistosomiasis); and
(d) food-borne illness (from organisms of Salmonella, Staphylococcus, Clostridium).

3.2 Relationship between major environmental health risk factors and diseases

Most of communicable diseases acquired in refugee camps are related to potentially preventable risk factors as indicated in Table 1.

TABLE 1. **Communicable disease risk factors in refugee camps**

WATER & SANITATION	CROWDING: DIRECT	CROWDING: VECTOR-RELATED	POOR SHELTER
Gastroenteritis	Measles	Typhus	Pneumonia
Dysentery	Meningitis	Relapsing fever	Other respiratory diseases
Cholera	Tuberculosis	Malaria	
Poliomyelitis	Diphtheria		
Typhoid	Whooping cough		
Hepatitis	Scabies		
Schistosomiasis	Trachoma		
Dracunculiasis (Guinea worm disease)			

3.3 Common constraints in the implementation of environmental health components, in descending order of importance

- funding limitation
- insufficiency of trained personnel
- logistics
- operation and maintenance of equipment
- inadequate or outmoded legal framework
- insufficient knowledge of water resources
- inadequate cost-recovery framework
- lack of planning and design criteria
- import restrictions
- inappropriate technology
- insufficient health education efforts
- lack of definite government policy for the sector
- non-involvement of communities
- inadequate water resources.

4. Environmental health operations measures in refugee areas

4.1 Environmental health measures

Overcrowding can have very serious effects in increasing the spread of disease and general deterioration of health. Newly arriving refugees are also often exposed to diseases against which they have little immunity.

However, taking appropriate measures in the establishment of sustained and effective environmental health operations in camps can reduce or eliminate the risks of preventable diseases and death among refugee populations. Such measures not only contribute to the good health of individuals in the camps and nearby areas, but they also decrease the high cost of providing health care services.

The environmental health measures that must be considered in refugee areas (Figure 1) include:

- provision of appropriate shelter;
- distribution of safe and accessible water in sufficient quantities for drinking and domestic purposes;
- protection and distribution of safe food products;
- provision of sanitary systems including latrines, solid waste disposal and vector control.

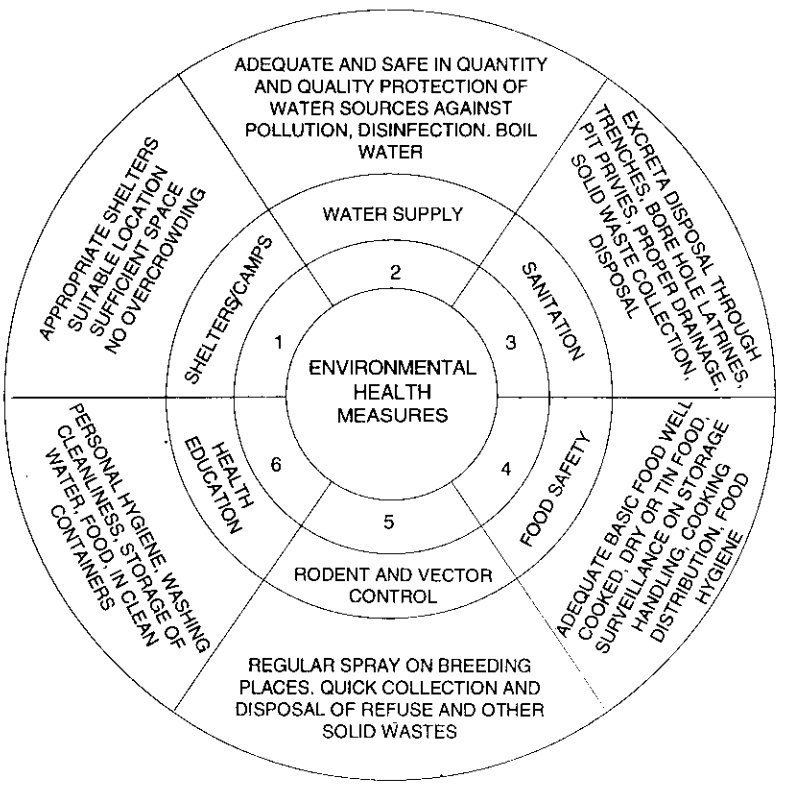


Fig.1. Environmental Health Measures in Refugee Camps/Areas

However, it is vital that rapid epidemiological surveys or studies of refugee areas should be carried out simultaneously for the proper planning, management and provision of environmental health and health care services.

In view of the magnitude of the task and in the interests of cost-effectiveness, the WHO strategy based on an integrated primary health care (PHC) approach is an appropriate way of addressing environmental health or health care problems in refugees areas.

The PHC approach of WHO runs on eight wheels. These are:

- education
- nutrition
- water and sanitation
- mother and child care
- immunization
- control of endemic diseases
- referral system
- availability of essential drugs.

Its three motivating forces are:

- intersectorality
- community care or participation
- appropriate technology.

4.2 Rapid epidemiology study

Refugee emergencies are characterized by rapid mass migration and subsequent establishment of relief camps which are often large and unplanned. Because of the suddenness of such occurrences there may be insufficient water, food and shelter in these camps, causing malnutrition and disease in the affected population. The earliest response is often prompted by emotive media reports and not by rapid epidemiological assessment, resulting in over-emphasis of curing people and subsequent high morbidity and mortality from preventable conditions, i.e., preventable by improvement in environmental health services.

It is paramount to make a rapid epidemiological study for the refugees in the camps which can serve as a useful tool in planning health care and in improvement of required environmental health services. The study conducted in Wad Kowli refugee camp in Sudan [2] is a good example of the planning of environmental health measures in refugee camps. (See Table 2.)

Table 2. **Use of epidemiological data to plan environmental health measures [2]**

DISEASE	ATTACK RATE CASES/1000 CHILDREN <5 YEARS	CASE FATALITY RATE	MEASURES TO DECREASE ATTACK RATE	MEASURES TO DECREASE MORBIDITY
Diarrhoea	130	19:1	- Improve water and sanitation	- Oral rehydration
Measles	97	3:1	- Immunization	- Supportive care
Malaria	112	68:1	- Vector control - Prophylaxis	- Diagnosis and treatment
Respiratory	63	39:1	- Improve shelter	- Diagnosis and treatment

4.3 Locations of shelters, camps

The locations for the establishment of relief camps near major cities and town should be predetermined and earmarked in the government-owned lands where adequate environmental health services could be arranged. Within the boundaries of earmarked areas, no encroachment or unauthorized construction should be permitted.

The WHO standard for physical space required per person is 3 square metres and 30 square metres for the camp itself.

4.4 Water supply and sanitation

The interactions between water, sanitation and health for the well-being of people are widely established. Thus the provision of safe and adequate quantities of water for drinking purposes is of utmost importance. Human beings cannot survive for more than three days without water, but the need for it is so obvious that it is sometimes overlooked.

All water supplies should be evaluated for quality and must be disinfected with chlorine compound or by portable chlorinators. Fleets of sufficient mobile water tankers should also be made available and they should be filled from safe water supply sources. In the absence of such arrangements during early stages, the population should be advised to use boiled water for drinking purposes.

Excreta disposal should be given primary importance along with other measures for the disposal of solid wastes in hygienic ways.

The cleaning of camps, the collection of solid wastes and their disposal at a designated sanitary landfill site, the cleaning of latrines and spraying of disinfectant and insecticidal chemicals should be carried out regularly in order to control unpleasant odour, breeding of flies and control of vectors.

4.5 Food safety

Food hygiene is of vital importance where mass-scale food is to be prepared and served, as in refugee camps. This can pose a major problem due to poor sanitation measures and can spread food-borne diseases caused by microorganisms such as *Salmonella, Styphylococcus,* and *Clostridium perfringens.*

The following are WHO's ten golden rules for safe food preparation. They should be observed for safe food preparation in the camps.

- Choose food processed for safety
- Cook food thoroughly
- Eat cooked food immediately
- Store cooked food carefully
- Reheat cooked food thoroughly
- Avoid contact between raw food and cooked food
- Wash hands repeatedly
- Keep all kitchen surfaces meticulously clean
- Protect food from insects, rodents and other animals
- Use pure water.

4.6 Insect and rodent control

The presence of insects and rodents in the camps will not only be a nuisance but can also transmit diseases. This is in addition to the economic damage and fire hazards they cause. The success of insect and rodent control largely depends on the application of environmental health measures, mainly waste disposal. The potential for increase of vector-borne disease occurrence and related problems are summarized in Table 3.

4.7 Health education

Simple rules of health education and sanitation should be introduced and applied.

Volunteer teams from the community should be set up for the introduction and propagation of basic sanitation rules. This can be attained by displaying and distributing posters and by regular announcements through loudspeakers.

These simple measures at the beginning could obviate many problems that could arise later, i.e. health hazards and incurring huge expense to control epidemics.

TABLE 3. **Vector-borne diseases [5]**

VECTOR	IMMEDIATE EFFECTS	DELAYED EFFECTS
Flies	annoyance	diarrhoea, dysentery, conjunctivitis, typhoid, cholera, fly larvae infestation, annoyance
Mosquitoes	bites and annoyance	encephalitis, malaria, yellow fever (urban), dengue, filariasis, annoyance
Rodents	bites	rat bite fever, leptospirosis, salmonellosis, rabies
Lice	bites and annoyance	epidemic typhus, louse-borne relapsing fever, trench fever, and annoyance
Fleas	bites and annoyance	plague, endemic typhus, bites and annoyance
Mites	bites and annoyance	scabies, rickettsial pox, scrub typhus, and annoyance
Ticks	bites and annoyance	tick paralysis, tick-borne relapsing fever, Rocky Mountain spotted fever, tularaemia, and annoyance
Bedbugs	bites and annoyance	Chagas' disease, annoyance
Ants, spiders scorpions, snakes	envenomization, bites and annoyance	envenomization, bites and annoyance

The following are the most important and simple measures for health education that should be announced, and practised, in the camps:

- Use boiled or disinfected water.
- Avoid wasting water.
- Wash hands before handling food.
- Wash hands with soap after defaecation.
- Do not scatter refuse and other food wastes.

- Clean and wash cooking/eating utensils.
- Avoid eating raw/uncooked food and over-ripe fruits.
- Never leave food too long or uncovered.
- Observe personal cleanliness.

5. WHO policies in emergencies and disasters

Within the framework of WHO guidelines set out in resolution WHA34.26 adopted in 1981, the Eastern Mediterranean Region (EMR) offers technical cooperation and emergency assistance to its Member States in various ways as indicated in the WHO Manual "WHO Action in Emergencies and Preparedness" Annex 1. Moreover, resolution WHA38.29, adopted in 1985, emphasizes the necessity of an integrated response to link emergency measures with long-term development as well as the need to intensify WHO's technical cooperation at country level and to enable Member States to enhance their own disaster preparedness.

To address both short-term relief and long-term structural response during emergency and disaster situations, WHO emphasizes the following:

- training of local personnel
- rapid assessment of health situation and needs
- coordination of large-scale disaster operations
- strengthening health information and communication systems
- improving efficacy of international assistance.

Furthermore, in Resolution WHA42.169 of December 1987, the World Health Assembly decided to designate the period 1990-2000 as the International Decade for National Disaster Reduction (IDNDR), in which the international community, under the auspices of the United Nations, would pay special attention to fostering international cooperation in the field of natural disaster reduction. WHO will stimulate the inclusion of health inputs into national plans and programmes, i.e. promotion and coordination within the health sector, technical support, education and cooperation with other agencies and NGOs in efforts aimed at natural disaster reduction.

6. Cooperation and other organizations

WHO cooperates very closely with many UN and nongovernmental organizations. The most important links at present are with the following:

- UNDP (United Nations Development Programme)
- UNICEF (United Nations Children's Fund)
- UNDRO (Office of the UN Disaster Relief Coordinator)
- UNHCR (Office of the UN High Commissioner for Refugees)
- Coordinator, UN "Operation Salam"
- UNRWA (United Nations Relief and Works Agency for Palestine Refugees)

- FAO, ILO, UNEP and WFP
- The League of Red Cross and Red Crescent Societies (LRCRCS)

7. Conclusions

The environmental health problems involved in the management of refugees will be addressed further in great depth by many eminent speakers during this Workshop. We trust that you have also brought some useful information derived from your rich experience encountered in the management of refugee camps in your countries, for discussion and exchange of views during the country presentation session of the Workshop.

It is hoped that your discussions and deliberations will prompt valuable recommendations for Member States as well as for the WHO EM Regional Office and other international bodies, in enhancing efficacy in the management of environmental health activities in refugees areas.

Some of the subjects for recommendations are outlined below. This may be considered in the formulation of your final recommendations.

7.1 At country level

- Preparation of a national emergency preparedness plan for environmental health management during emergent and non-emergent situations, caused by refugee situations.
- Identification of national focal points at central, provincial, district and local levels.
- Establishment of effective coordination mechanisms.
- Establishment of an environmental health data base system.
- Establishment of environmental health departments at central, provincial and district levels, with full logistic support to cope with emergencies due to refugee and refugee-related situations.
- Development of national guidelines for environmental health management in refugee areas.
- Training at all levels on a long-term basis for human resources development.
- Application of primary health care (PHC) and integrated approach in the management of environmental health activities in refugees areas.
- Promotion of the International Decade for Natural Disaster Reduction.
- Organizing national workshops on environmental health management in refugee areas.

7.2 At WHO regional level

- Enhancement of mechanisms for coordination and early response with international agencies for environmental health management in refugee areas.
- Establishment of environmental health "disaster modules" and an information exchange system for the Region.
- Promotion of the strengthening and integration of environmental health and emergency preparedness and response (EPR) activities into other collaborative programmes (such as primary health care) with Member States in refugee areas.

- Consideration of technical support in the organization of national workshops on environmental health management in emergencies.

8. References

[1] Environmental health management in emergencies in EMR. M.A. Mullick, Regional Adviser, WHO/EMRO. Regional Workshop on Environmental Management in Emergencies, Amman, 2-6 December 1989, WHO/EMRO, Alexandria, Egypt.

[2] Epidemiological assessment of the health and nutrition of Ethiopian refugees in emergency camps in Sudan. 1985. Paul S. Rears. et al. British Medical Journal. 295, August 1987.

[3] Proceedings of the WHO/EMRO Workshop on Disaster Preparedness and Health Relief Management. Hammamet, Tunisia, 30 October - 3 November 1988. WHO/EMRO, Alexandria, Egypt.

[4] Afghanistan after the turmoil. Mumtaz Hussein. World Health Magazine, Geneva, July 1989.

[5] Environmental health management after natural disasters. PAHO. WHO Scientific Publication No. 430, 1982.

[6] Emergency vector control after natural disasters. PAHO. WHO Scientific Publication No. 419, 1982.

Health management problems in refugee camps in Pakistan

Altaf Ur Rahman Khan

1. Introduction

Due to rapid political changes in Islamic State of Afghanistan, in 1973 and 1978, approximately 109 000 Afghan refugees arrived in Pakistan. In 1979 due to further disturbances the number of refugees almost doubled, to 193 000. After the Soviet invasion, the number leapt to 402 100.

Initially, the refugees were handled by the Pakistan Disaster Relief Cell as the situation was considered to be a temporary problem. Immediate health problems of the refugees were handled by the local, district, provincial and federal hospitals and government medical facilities were used by the Afghan refugees. However, it was felt that these facilities were already overloaded and putting more strain on them would not be feasible.

In December 1980 a Presidential Directive established the structure of the Refugee Health Services which have catered for the ever-increasing number of refugees in Pakistan as shown in the slide presented at the Workshop and in the table below:

Refugee influx at a glance (registered population)

1.	Up to December 1979	402 100
2.	Up to July 1980	Over 1 million
3.	Up to May 1981	Over 2 million
4.	Up to January 1982	Over 2.5 million
5.	Up to December 1985	3 million
6.	Up to December 1988	3.25 million
7.	Up to September 1990	3.29 million
8.	Up to 15 January 1991	3.24 million

Initially, mobile health units were employed to provide health care to the refugees but, as the population increased, Basic Health Units (BHUs) were established jointly by the Government of Pakistan and UNHCR at the rate of one BHU for every 10 000 refugees. To cope with the extra work, help was also sought from NGOs but in order to avoid duplication, special tasks/areas were allotted to the NGOs, the number of which reached 75.

Regular meetings between health authorities and the Government of Pakistan, UNHCR and representatives of NGOs were held to streamline health care activities.

From 1979 to 1982 the health programme was mostly curative, i.e., not covering preventive or promotive aspects. However, in 1982 it was extended to all aspects of health care including Expanded Programme on Immunization (EPI). Over a period of years EPI coverage has gone up to 80%.

At first, due to lack of proper hygiene, sanitation and an almost non-existent EPI Programme, the danger of health hazards and epidemics loomed large. Refugees were accustomed to using the open fields for excretion purposes. To start with, pit latrines and later on VIP latrines were introduced and eventually almost 100% of the population was provided with VIP latrines throughout the refugee camps. Special emphasis was laid on this aspect and deputy project directors for sanitation, environmental health and EPI were appointed in North-West Frontier Province (NWFP).

Incidence of tuberculosis and malaria among Afghan Refugees was almost six times that among the local population. This was due to the breakdown of malaria and tuberculosis control programmes in Islamic State of Afghanistan as well as to adverse conditions of camp life in Pakistan. Special tuberculosis and malaria control programmes were introduced in 1982 and by 1985 incidence of these two major diseases had been brought to the national level. However, due to a gradual decrease in funding and the prolonged stay of refugees in camps, there has again been some increase in the incidence of these two diseases, especially malaria.

Another adverse affect of prolonged camp life in Pakistan is the higher incidence of skin and diarrhoeal diseases and also of intestinal worms (helminthiasis).

2. Water supply in camps

It was proposed that 25 litres of potable water per person per day would be provided to the refugees. The following sources of water are being used in various camps:

1. piped water
2. tubewells
3. shallow wells
4. hand-pumps
5. streams/rivulets
6. "karez" and ponds (Baluchistan)
7. mobile water tankers where no other source is available.

In Mianwali, Punjab, piped tubewell water is being supplied in sufficient quantity to all refugees. In NWFP, the target of proposed water supply has been achieved. However, in Baluchistan it has always been a problem to supply even half of the proposed potable water to the refugees, thereby causing hardship and some health problems.

3. Status of mental health

Initially the refugees had good morale and had not developed psychological disorders. However, with the passage of time and the decrease in funding/reduction in health care activities, they began to show signs of stress and strain, thereby adversely affecting the cordial relationship between the refugees and the management.

The concentration of large number of refugees in comparatively restricted areas also had an affect on the physical and mental well-being of individuals. To cope with the situation,

training in skills such as embroidery, carpet weaving, kitchen-gardening and poultry farming were introduced and this has helped considerably.

The arrival of many war-wounded, disabled and destitute refugees, including widows and orphans, had a demoralizing effect which has again been countered with occupations therapy.

4. Conclusions

In order to provide comprehensive medical coverage to more than three million Afghan refugees located in 343 camps situated in the four provinces of Pakistan, a proper medical service especially for the refugees was established.

A Director of Medical Services (DMS) at the centre, Project Directors Health, (PDHs) with their departments in the Provinces, and Field Supervisory Medical Officers (FSMOs) in the districts were appointed.

Training in health management/education was regulariy given at all levels. There was complete coordination between the Government of Pakistan, UN bodies and specialized agencies e.g., UNHCR, WHO, UNICEF, WFP etc. as well as with national and international NGOs and representatives of friendly countries, resulting in a streamlined health delivery system. During a decade of health management, the general health of the refugees remained satisfactory. There were no epidemics or cases of gross malnutrition.

However, as camp life drags on and humanitarian aid is being drastically cut, some problems are being experienced. Apprehension regarding the possible withdrawal of medical staff at short notice, together with reduction in facilities and some cases of abduction of medical personnel has led to a general unrest and even some strikes by medical staff. There have been compromise formulas, such as the "golden handshake" (some lump sum benefits paid to medical staff to be laid off).

It is hoped, however, that the satisfactory record of the health care delivery system provided to the Afghan refugees will continue until the safe and honourable return of the refugees to their own country.

Approaches to environmental health management in refugee areas

O. Sperandio

1. Introduction

A refugee is a person who "owing to well-founded fear of persecution for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and unable or, owing to such fear, is unwilling to avail himself of the protection of such country" (UNHCR - Convention and Protocol relating to the Status of Refugees) [1].

In their flight, refugees search for a place where they can settle and find conditions for living and subsistence. Quite often they move by hundreds and even thousands and, by staying together, they find a way to protect themselves and to provide mutual support and assistance. From the moment they leave their native areas they have to face physical hardship, lack of permanent shelter, problems of food and water supply and a variety of environmental hazards. As a result of this they are human beings under stress and, having to live in a new and sometimes hostile environment, they become highly vulnerable to distress and disease, both physical and mental [2, 3].

The environmental health problems associated with refugee movements are complex and the nature of the relief assistance that can be provided may vary greatly. Solutions for such problems will have to take into account the phase of the refugee movement and the prevailing environmental conditions in the areas where the refugees move in their search for a place to stay.

Environmental health management in refugee situations should encompass not only the identification and solution of problems in camps but also the preventive and corrective measures to be taken in all phases of the refugees' displacement, their settlement in other areas and, when this occurs, their repatriation.

2. Refugees and environmental health

2.1 The physical environment

There are different types of situations that a refugee may encounter when arriving in a new country. In some cases, when the number of refugees is small, they may be settled spontaneously by the residents of the host country. If the refugees become too numerous they may go to refugee camps, quite often established by the host government and run with the cooperation of international organizations such as UNHCR and UNRWA.

The physical arrangement can be a *reception centre,* which is the point of arrival of the refugee after crossing a border and where he/she will stay a short period, normally to receive emergency assistance and to be registered, until transferred to a *refugee camp.* A refugee camp is the traditional arrangement set up to house refugees. Quite often, in camps, the refugees are fully dependent on external support for services such as health care, food, water supply, education, etc. A refugee camp may become, at a later stage, a type of settlement where the inhabitants have some degree of self-sufficiency and are expected to arrange for most of their own food, to improve shelter conditions by their own efforts and to participate actively in interventions to improve the overall infrastructure of the settlement.

In some countries the term "camp" is generally used, regardless of the duration of its existence and of the way in which the refugees live there. In others there is a tendency to accept that the term "settlement" is better when refugees have lived there for a long time and have reached a certain degree of self-sufficiency.

There are countries in the Eastern Mediterranean Region where many refugees are already integrated and settled in small comminutes or in cities; they no longer live in a camp or other type of refugee settlement and they share with the nationals the facilities provided by public services and the overall social welfare infrastructure.

2.2 Environmental health conditions

Camps and settlements have different patterns and can vary greatly in environmental conditions and in the provision of basic services for water supply and waste disposal. Refugee camps and settlements in the Eastern Mediterranean countries still have some problems with water supply and quite often they have major deficiencies related to excreta and wastewater disposal, solid waste disposal, drainage, vector control and food hygiene. Shelter conditions may vary widely, from tents to concrete block houses (in older camps) but in almost all situations refugees face the problem of overcrowding.

Much progress has been made in the refugee camps of the Eastern Mediterranean Region regarding water supply. The cooperation of UNHCR and UNRWA has been instrumental in raising awareness of the importance of the distribution of safe water for the refugee population, and it is possible now to find refugee camps in which the water supply situation is better than in the neighbouring communities and by far better than in settlements of displaced persons who are in some way "refugees" in their own country.

If the situation regarding water supply is acceptable in many refugee camps in the Region the same cannot be said about waste disposal. In some camps very little has been accomplished regarding excreta disposal. Inadequate drainage and solid waste disposal pose serious problems and, as a consequence of these deficiencies, there is a high rate of infestation by insects and rodents.

Camps can differ greatly in their environmental health conditions. Whereas some camps for Palestinian refugees in Jordan have a coverage of more than 90% of the people with piped water supply and excreta disposal facilities, refugees in camps in other countries have to live with about 10 to 20 l.p.c.d., with no facilities for safe excreta disposal, and face serious problems with vector-transmitted diseases (e.g. malaria).

Many efforts are being made to upgrade environmental-health-related conditions but the existence of a population of more than 8 million refugees scattered throughout several

countries and sometimes settled in areas with very little resources, makes the task a very difficult one and a great challenge for the national and international agencies responsible for these refugees.

3. Issues to consider - constraints

There are several issues hindering a more rapid and sustained improvement in environmental health conditions in refugee areas; among them the following can be cited:

3.1 Policies regarding refugees

Some countries have a policy favouring the integration of refugees into their communities, whereas others prefer that refugees stay in camps, in a "temporary status", ready for repatriation when the situation changes in their home country and they can return. The implications of such policies are obvious. In some countries there is an assumption, even if this is not stated officially, that improvements in the services of refugee camps should take into account that they are only temporary settlements which can be phased out at any moment.

Lack of clear policy on the status of refugees may obstruct the planning of durable solutions.

3.2 Environmental conditions in the neighbouring communities

When refugees settle in an area where neighbouring communities have poor environmental health conditions, it is to be expected that it will be difficult to get support from local government to improve environmental health services in the refugee settlement. In some cases, international cooperation will make it possible to have a reasonably high standard of basic services in the refugee area but in the long term it will be difficult to improve further if this depends on support from the local authorities.

3.3 Lack of criteria for selection of the site for a camp

Quite often refugees settle in a place, be it spontaneously or by decision of governmental authorities, and soon the conclusion is that the site is not adequate for a refugee settlement. A well known case is that of refugee camps which are in areas where it is very difficult to solve the water supply problem and drainage is not feasible with the limited resources available.

Sometimes the selection of the site for a refugee camp is dictated more by political considerations than by a comprehensive analysis of the adequacy of the selected place, which would take into account aspects related to land use, communications, feasibility for provision of food, social assistance, basic services and possibility of work for the refugees.

3.4 Lack of interest of refugees

In many cases refugees come from either rural or urban areas in their native country where overall conditions regarding housing, health care and environmental health services are very poor. They are used to living with such deficiencies and this may imply that they will be passive and even uninterested in being involved in efforts to improve living conditions and to solve environmental-health-related problems. Provided they have a certain amount of water for their normal basic needs they may resist efforts aimed at cleanliness of the camp, appropriate waste disposal etc. It is only through well organized programmes of health and sanitary education that they will change their attitudes and behaviour.

3.5 Lack of resources

Many of the nations that find themselves hosting refugees are developing countries and as such they have serious limitations regarding resources for social services, health care and development of an appropriate infrastructure for public services. Recognizing this situation, United Nations bodies such as UNHCR and UNRWA, as well as many multilateral, bilateral and voluntary agencies, provide funds and assistance for refugee relief operations. However, resources available from national and international sources are not enough to cope with the great demand for food, shelter, education, health care and environment-health-related services.

An important issue to consider is the shortage of human resources, properly trained, to provide support for the planning and implementation of environmental health interventions.

3.6 Lack of intersectoral coordination

At country level the refugee problem requires a multisectoral approach. The management of an influx of refugees implies, *inter alia*, the inclusion in political decisions of elements concerning land use, transportation and communication schemes, a public health strategy, environmental-health-related assessments, immediate actions on shelter, etc. In some countries facing the problem of refugees this multisectoral approach is not properly adopted and the specialized agencies that have the know-how to provide reliable advice do not participate in the planning process and may only enter the picture at a later stage.

4. Approaches to environmental health in refugee areas

4.1 General

Since refugee situations can differ greatly and refugee camps can be in differing stages of evolution (some of them established more than 40 years ago, as in the case of refugee settlements in Jordan), it is difficult to propose guidelines for environmental health interventions in refugee situations that can be of universal use.

Based on their wide experience, UNHCR and UNRWA have developed guidelines applicable to the areas where they operate [4]. UNHCR has advanced the preparation of guidelines for environmental health services in Pakistan [5]. UNRWA has several documents which provide general criteria and information on technological solutions for environmental-health-related interventions in Palestinian refugee camps [6]. Guidelines have also been prepared to respond to specific needs, as for example the sanitation guidelines and construction manual prepared for Somalia [7].

However, although it is difficult to propose technical guidelines for general use, there are aspects and approaches which are valid in most refugee situations and therefore are worthy of consideration by those dealing with environmental health management. Some of these approaches are dealt with below.

4.2 The sense of "urgency"

A sudden influx of a large number of refugees in a certain area of a country constitutes an "emergency situation" and should be treated as such. Failures and delays in advancing emergency measures to provide food, shelter, health care and safe water can imply serious risks for the health and well-being of the refugees.

In many cases such emergency measures have to be taken by the host government immediately, since it is only at a later stage that international and voluntary agencies start to provide direct relief assistance. Emergency measures on environmental-health-related aspects should be taken in consultation with public health authorities. For water supply and sanitation a rapid assessment of the situation should be made in order to make it possible to study alternatives and to propose the necessary interventions without delay. Staff from water supply agencies operating in the area concerned should participate in the relief process from the beginning and not be requested to cooperate only at a later stage.

The above applies not only to refugee situations but also to sudden internal movements of displaced persons and mass evacuation in other types of emergency.

4.3 Site selection

The selection of a site for a refugee settlement is not an easy task, There are many factors involved and quite often political criteria prevail. Public health authorities, water supply agencies and environmental protection institutions should play an active role in the assessment of the adequacy of an area for settlement of refugees. Environmental health aspects should receive high priority in determining appropriate solutions for water supply, waste disposal, drainage and vector control.

4.4 Technological approaches

Conventional environmental health technologies may not always prove appropriate for refugee situations. Quite often they need some adaptation in order to be really useful in solving problems associated with refugee movements and settlements. Field-tested technologies that are culturally and socially acceptable to the refugees should be given preference.

Technological approaches have made it necessary to take into account that refugee settlements are quite often considered to be of a "temporary nature", but efforts should, nevertheless, be made for the solutions adopted to provide a level of service compatible with the basic needs of the population.

In countries hosting a large number of refugees it is advisable to standardize approaches and technologies, to make possible lower investment costs and easier operation and maintenance [5].

4.5 Water supply

The matter of drinking water supply in refugee situation requires very special attention. From the moment refugees start their flight, drinking water is a major concern, for the refugee themselves and for the authorities responsible for refugee relief assistance. Any delay in providing safe water to refugees can have serious implications. Refugees normally become highly vulnerable to diseases mainly as a result of stress, undernutrition and unfavourable environmental conditions. In their flight they will use whatever water they can find, frequently unsuitable for drinking purposes and, as a consequence, there will be a high risk of incidence of water-related diseases. In some refugee movements there is high morbidity and mortality due to water-related diseases, mainly diarrhoeas and other gastrointestinal disorders [8].

Water to be distributed to refugees, be it through water tankers or by public taps, should be disinfected and high residual chlorine be ensured at the points of distribution [9].

Frequently water is polluted during transportation and storage by the refugees. A commendable procedure is to provide refugees with a type of container that permits protection of water during transportation and can be cleaned easily. Whenever possible, local production of sanitary jars should be promoted within the refugee community.

Water to be distributed to refugees should be bacteriologically safe; for other aspects of water quality, regarding physical and chemical parameters, there can be more flexibility and efforts to improve such aspects can be made gradually.

4.6 Waste disposal

Waste disposal has proved to be a great challenge for those responsible for environmental health measures in refugee settlements. The information available shows that, in many refugee areas, little progress has been made despite the efforts of national and international agencies.

The experience of many years, with successes and failures, has helped agencies responsible for refugee relief to identify constraints and to develop some approaches to deal with the problem. The success of any waste disposal programme for refugees is directly linked to health/sanitary education and to community participation and involvement. In some cases it is practically useless to promote the construction of facilities if the potential users are not convinced of the need for and advantages of using them.

Special attention has to be given to the beliefs and idiosyncrasies of the refugee population which in some cases may invalidate some technological solutions. For example, the Afghan culture excludes communal systems [5].

If piped water is available in a camp, attention should be given to wastewater disposal; the experience of UNRWA regarding wastewater disposal and drainage merits being considered as

an example. The programme for paving pathways, developed with the participation of the refugees, has given very good results [6, 10].

Solid waste disposal in refugee camps is another aspect that deserves attention and measures should be taken for collection and disposal of refuse generated by the refugees in their dwellings and in pubic places, health centres, bazaars, etc. Alternatives should be proposed for on-site disposal and for collection, transport and disposal [2].

4.7 Environmental conditions - integrated approach

The environment in which refugees move and settle should be viewed with a holistic approach. Special attention should be given to the linkages and interactions of environmental health factors. Examples are: the complementarity between water supply and sanitation, the importance of water supply for personal and home hygiene and the direct relationship between waste disposal and vector infestation. It is important to ensure that the solution of one problem does not give rise to another, as is the case with public taps and bathing places that generate a wastewater disposal problem and poorly maintained latrines that cause problems with odours and flies.

The integrated approach is particularly important when assessing environmental conditions in refugee situations, when selecting a site for a camp and in the planning and implementation of environmental-health-related interventions.

4.8 Community infrastructure (environmental health aspects)

Refugee settlements need a social infrastructure with at least a health unit and a school. Depending on the size of the settlement, public markets and ancillary facilities such as bath houses and slaughterhouses will be part of the community infrastructure. Such public places and ancillary facilities will need to be provided with basic sanitary services; before they are built or installed attention must be given to the solution of problems related to water supply, sanitation and solid waste disposal as well as to possible nuisances related to the proliferation of insects and rodents [6]. It is important to assess, from the beginning, how these public places and facilities will fit into the overall environment of the settlement. Quite often it is only after they have been installed and the environmental problems appear that adequate measures are taken.

Schools need very careful attention regarding water supply, sanitation and overall hygiene. Children have to be motivated, through the school's good example, to carry the message home in the interests of a healthy and safe environment. To a certain extent the same applies to the health centre; if the sanitary facilities in the health centre itself are poorly maintained it is not be expected that the messages that community health workers are trying to convey, regarding safe waste disposal and home hygiene, will be received and acted upon by the refugee population.

4.9 Community participation - health education

Improvement of environmental health conditions in refugee camps and settlements can only be accomplished on a sustained and effective basis if the refugees themselves participate

in the process and become increasingly aware of the advantages of better environmental conditions for their health and well-being.

In many camps the refugee population still plays a role of "passive recipient", giving very little voluntary cooperation to adopt safer practices for personal hygiene and for a cleaner environment. A change in their attitude can only be accomplished through a systematic effort for health education and community participation and involvement.

Community health workers, sanitarians and other health personnel can play a key role in the process of health education and overall strengthening of community participation.

4.10 Primary health care approach

In the Eastern Mediterranean Region most of the agencies responsible for health care of refugee populations follow the primary health care (PHC) approach. Water supply and sanitation are among the basic components of this approach; therefore, interventions related to environmental health should be closely associated with the overall health care effort [8].

Community health workers should be properly trained in aspects related to environmental health and, by the same token, sanitarians must have a full understanding of the ways in which environmental health aspects interact with other PHC components.

The concept of "basic minimum needs", promoted by WHO, should be taken into account by the authorities responsible for health care in refugee areas.

5. Final comments

The emergency situations originated by refugee movements and temporary settlements involve a wide spectrum of environmental health problems. The solution for such problems may require specific strategies and approaches as well as the use of appropriate technology.

There are more than eight million refugees in the countries of the Eastern Mediterranean Region. There is already a great deal of experience in matters related to environmental health in refugee situations; however, unfortunately, only a small proportion of this experience is properly documented and/or made available to those concerned with the refugee problem. Mechanisms will have to be developed to facilitate the process of information exchange.

This paper has not directly addressed aspects related to training, information exchange and development of national capabilities, since these subjects are covered in other papers prepared for the Regional Workshop on Environmental Health Management in Refugee Areas.

6. References

[1] United Nations High Commissioner for Refugees. *Convention and Protocol Relating to the Status of Refugees*. Geneva, United Nations, 1983.

[2] U.S. Department of Health and Human Services. *The Public Health Consequences of Disasters* - 1989. Center for Disease Control, Atlanta, 1989.

[3] Hussein, M. *The Health of Afghan Refugees in Islamic Republic of Iran.* Geneva, WHO, 1987 (Document WHO/COR/EPR/87.1).

[4] United Nations High Commissioner for Refugees. *Handbook for Emergencies.* Geneva, UNHCR, 1982.

[5] Okoye, P. *Guidelines for Environmental Health Services for Afghan Refugees in Pakistan.* Islamabad, UNHCR, 1989.

[6] Abdullah, M.A. *Environmental Health Services in the Refugee Camps in Jordan.* Dundee, University of Dundee, 1984. (Unpublished).

[7] Shook, G. *Sanitation Guidelines and Construction Manual.* Mogadishu, Ministry of Health, 1986.

[8] Simmonds, S., Vaughan, P. and Gunn, S.W. *Refugee Community Health Care.* New York, Oxford University Press, 1985.

[9] Rajagopalan, S. and Shiffman, M.A. *Guide to Simple Sanitary Measures for the Control of Enteric Diseases.* Geneva, World Health Organization, 1974.

[10] United Nations Relief and Works Agency for Palestine Refugees in the Near East. *Annual Report of the Director of Health - 1987.* Vienna, UNRWA, 1988.

[11] Azevedo Netto, J.M. *Innovative and Low-Cost Technologies Utilized in Sewerage.* Sao Paulo, 1989. Unpublished.

[12] Shalbak, N.M. *Environmental Health in Refugee Camps in Jordan.* Notes for the Meeting of UNRWA's Sanitary Engineers. Amman, 1989. (Unpublished).

Environmental health management in refugee camps in North-West Frontier Province (NWFP), Pakistan: The UNHCR experience

J. Caraher and Arbab Qadir

1. Introduction

Following the Soviet invasion of Islamic State of Afghanistan in 1979, millions of Afghans fled to neighbouring countries, principally Islamic Republic of Iran and Pakistan. The majority settled in North-West Frontier Province (NWFP) of Pakistan. Most of them arrived in Pakistan between 1979 and 1981.

There is a close ethnic relationship between the Afghan refugees and the Pakistan population in NWFP, particularly the Pathans who live in the tribal agencies (FATAs). The refugees were readily accepted, and settled in open "Refugee Villages (RVs)" of various sizes. Most of these were sited on government or army land.

The Afghan refugees have been allowed to pursue employment opportunities in Pakistan, and to move freely within the country. However, they cannot own land or property.

At the present time there are approximately 2.23 million registered, and a number of unregistered refugees settled in 250 RVs in NWFP. A considerable number have settled in urban areas.

The RVs are scattered over 18 districts and tribal agencies throughout the province (Annex 1).

2. Background

2.1 Refugee origin and culture

Most of the refugees come from Afghan provinces close to Pakistan, and belong to various tribal groupings, 70% of which are Pathans. They are orthodox Muslims and practise "purdah" which involves, as far as possible, the separation of male and female activities. The compounds are generally surrounded by high walls, and if women are allowed to leave them they must completely cover their bodies and faces, so as not to be seen by men other than their husbands and very close kin. Women are therefore debarred from being attended by males in the health services, and male health workers cannot generally enter a compound while women are present.

2.2 Education and skills

According to the UNRISD survey [2] of 1986, only 41% of males over 6 years of age, and 3% of females are literate.

Seventy per cent of refugees have an agricultural background, 8.5% were skilled labourers, and the remainder professionals, traders and unskilled labourers. A small percentage are nomads.

2.3 Refugee camp environments

The scale and rapidity of the refugee influx put great stress on the already meagre resources of the local populations. Suitable sites for refugee camps were not readily available, and the rapidity of the influx did not allow for adequate site selection and infrastructural development. It was not anticipated that these camps would become permanent "villages".

Some of the villages are sited on waterlogged areas close to river banks, others on extremely rocky ground. Few villages were in any way "planned" in terms of environment, access, availability of water supply, or other factors.

It is to be noted that a considerable number of refugees in NWFP migrate to cooler locations in the hot season (for approximately six months).

2.4 Refugee health services

In 1980 a refugee health service was established under a Director Medical Services (DMS) at the Chief Commissionerate for Afghan Refugees (CCAR), and provincial Project Directors of Health (PDHs). This service was supported by UNHCR and by a number of voluntary agencies (NGOs), which also provided health services for the refugees.

The services were based originally on mobile medical teams. The provincial EPI and malaria control programmes operated separate vertical programmes in the camps.

In 1982 the services were strengthened with the appointment of Field Supervising Medical Officers (FSMOs) and the establishment of permanent (static) health services in the camps, with the integration of vertical programmes under their supervision. These static health units (BHUs) were organized on the local provincial health services model.

At the present time there are 93 BHUs and 16 sub-health units (SHUs) operated by PDH with UNHCR support in the province, and a further 83 BHUs operated by the voluntary agencies. A number of hospital and specialized health services for refugees are also provided by voluntary agencies, mostly in the urban areas. Refugees are also permitted to use the services of local government hospitals.

Each BHU has a staff of (a) medical officer (usually male) (b) lady health visitor (LHV), (c) dispenser, (d) malaria supervisor/sanitarian, and (e) dai. There are also a number of volunteer male community health workers (CHWs) and traditional birth attendants (TBAs) in the camps, who form a link between the BHUs and the community. Currently, approximately 5000 CHWs and 3000 TBAs have been trained and are working in the RVs; however, their distribution is uneven.

2.5 Sanitation practices in Islamic State of Afghanistan

The majority of the refugees come from rural areas and small villages. The villages are widely scattered throughout the mountains and valleys of Islamic State of Afghanistan. Sanitation was primitive but did not present a significant health hazard.

In the towns and larger villages the most common type of latrine is a "kabuli" or "kanarab" which is a raised small pit with a raised floor and a hole for the faeces. The contents drained into the street and were generally collected by farmers for use as fertilizer.

Few refugees had any concept of the need for sanitation or environmental hygiene when they arrived in the densely populated refugee villages of Pakistan, but were particularly concerned about privacy for the women. The refugee camps were originally large tented villages, with little privacy possible.

3. Sanitation programme

3.1 History of the programme

The Sanitation and Basic Health Programme was set up in July 1981 by a Swiss NGO, Enfants du Monde. The organization initially conducted a needs assessment survey among the Afghan refugees and designed a programme involving motivation, pit latrine construction, training, and health education.

In July 1982 the Austrian Relief Committee (ARC) was contracted by UNHCR to take over from Enfants du Monde as the implementing agency in the non-tribal areas of NWFP. In 1983 UNICEF, with UNHCR funding, set up a similar programme in the tribal agencies, which was taken over by the Pakistan Red Crescent Society (PRCS) in 1986. In 1985 another NGO, The International Rescue Committee (IRC) took charge of the programme in the Hangu area of Kohat. All the NGOs' activities were funded by UNHCR, which together with the PDH coordinated the activities in this sector and provided technical support.

3.2 Objective of the programme

3.2.1 Overall objective

To establish and maintain an environmental health programme designed to prevent the spread of diseases caused by poor health conditions, and to promote a safe, clean environment in the villages.

3.2.2 Specific objectives

(1) To establish simple and viable systems which could be used and maintained by the refugees.

(2) To improve public health conditions in the RVs, as well as the well-being of the refugees, keeping in view the World Health Organization's goal of "Health for All by the Year 2000".

(3) To integrate the activities in this sector into the overall health programme of the Basic Health Units (BHUs).

(4) To organize training programmes aimed at improving the theoretical knowledge and technical skill of sanitarians and outreach workers and other health staff involved in the delivery of environmental health services.
(5) To promote malaria control activities in the RVs on a regularly scheduled and planned basis.
(6) To establish strategies which will encourage refugee participation in this sector with subsequent adoption of similar schemes and strategies where applicable when they return to Islamic State of Afghanistan.

3.3 Development of the programme

3.3.1 Early stages

As the refugee camps are situated mostly in areas where water supply is limited, a dry system was required. The system needed to be economical, practical and easily maintained, as well as being acceptable culturally.

At this time it was decided to modify and improve the traditional Afghan "kabuli". As the refugees had no need of excreta for agricultural purposes a three metre deep pit was dug and covered with a 60 x 60 cm concrete slab with a keyhole in the centre. The hole was covered with a metal lid. The refugees build a mud wall around the latrine with a thatched roof.

It was also recognized that a considerable amount of motivation and health education was required to convince the refugee population about the health hazards involved in their new circumstances, to put in the effort required to dig a three metre pit, build the walls and maintain the latrine. Few refugees accepted that they would have to stay long enough in Pakistan for this to be worth the effort.

3.3.2 Later developments

In 1984 the slab size was increased to 100 cm x 70 cm so as to ensure safety in poor soil, and a ventilation pipe was added to control flies and odours. The facility became a modified ventilated improved pit (VIP) latrine.

Health education was intensified, and school teachers and children were added to the target groups. Curricula and teaching aids were developed. Sanitarians were trained for the camps.

In 1984/85 better coordination was achieved among the various agencies and the BHUs. Standardization was achieved in slab dimensions and quality, and in pipe dimensions. Guidelines for sanitation programmes were developed. Refugees became involved in slab production through income-generating schemes.

Since 1985 various components of a primary health care (PHC) programme have been developed. Afghan refugee male community health workers (CHWs) and female traditional birth attendants (TBAs) have been trained, and work as volunteers in the refugee villages. They receive basic training in personal hygiene and sanitation, and conduct teaching sessions or small group discussions in the RVs. This has added to the health knowledge and understanding of the refugee population.

3.4 Present latrine design

3.4.1 VIP latrine

1. The pit should be at least 3 metres deep, and 80 cm x 70 cm wide. In unsuitable soil a concrete ring should be added.
2. The slab measures 110 cm x 110 cm with a keyhole and hole for vent pipe.
3. The vent pipe has a 3-inch diameter or greater and can be made of either PVC or tin; it should be 3 metres long and covered with a screen. (See guidelines for further details of design) [1].

3.4.2 Surface latrines

In areas with a high water table, it has been necessary to construct concrete surface latrines. These are double vaulted, each vault with a capacity of approximately 0.9 cubic metres. Each latrine is sufficient for a family of seven for about six months.

These latrines are considerably more expensive to construct, and much more attention must be given to education of the families on their upkeep and maintenance. To date, approximately 3350 have been constructed under the direction of the agencies involved.

3.5 Implementation of the programme

The three NGO implementing partners operate in a similar manner. Field teams consisting of field officers and female health motivators move from RV to RV. Meetings are held with the BHU staff members and village elders, and a survey of sanitation needs is conducted. The teams train BHU staff and school teachers in basic health education methods.

Female team members move from house to house and teach mothers basic hygiene and disease prevention. The motivators use standard teaching methods employing charts, pictures and other visuals aids. A bar of soap is issued to each mother who attends the sessions. The women are instructed in the proper use and maintenance of the VIP latrines. These instructions are followed up by the teachers in the schools, the staff at the BHU in the RVs on health education days, and by the CHWs and TBAs in the homes on a regular basis.

The field officers motivate the refugees to dig latrine pits 3 m deep and 80 cm wide. Once the pit is complete a slab is issued to the family. When the walls and roof of the latrine are complete, the pipe, screen and lid are issued.

The field officers inspect the camp's surrounding markets and water distribution points, and encourage the refugees to eliminate environmental hazards. Refugee families are instructed in the safe disposal of refuse and solid waste.

On subsequent visits field teams visit the refugee families and inspect VIP latrines and compounds. Broken pipes and screens etc. are replaced and further instruction provided when required.

Teams maintain close cooperation with the staff of the BHUs, particularly the malaria supervisors/sanitarians and the medical officers. Latrines are provided for BHUs and schools when required.

3.6 Unit cost of latrines

The slab, pipe, lid and screen for each VIP latrine costs approximately Pak Rs 240 per unit. The total cost per unit, including health education teams, motivation, transport and administration etc. was approximately Pak Rs 1000 in 1990.

4. Achievements of the programme

4.1 Latrine construction

Since 1981, 153 022 latrines have been constructed in the RVs under these projects (see Annex 2). This includes approximately 3500 double vaulted surface latrines built in areas with a high water table. Figure 1 shows the yearly achievements from 1981 to 1990. Annual targets are being reduced in line with coverage and the possibility of repatriation of Afghan refugees. Annex 3 shows the project outputs for 1990, including soap distribution, health education sessions, etc.

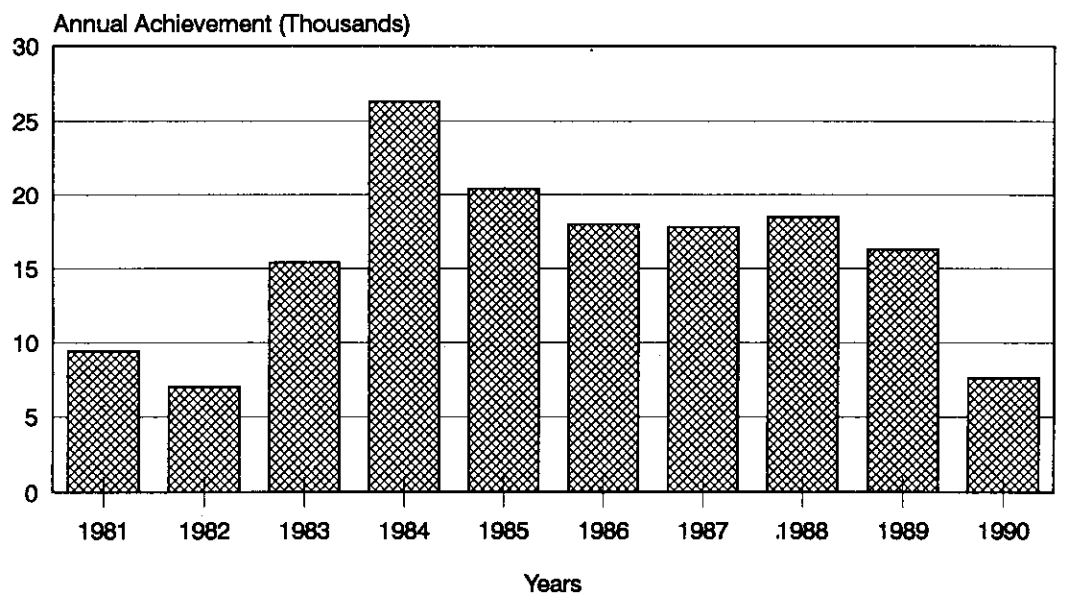


Figure 1. Latrine construction programme, NWFP

4.2 Coverage

In tribal agencies (FATAs) a combination of factors, particularly security, dispersed populations, migration and cultural attitudes has kept the coverage lower than in the settled areas (see Figure 2).

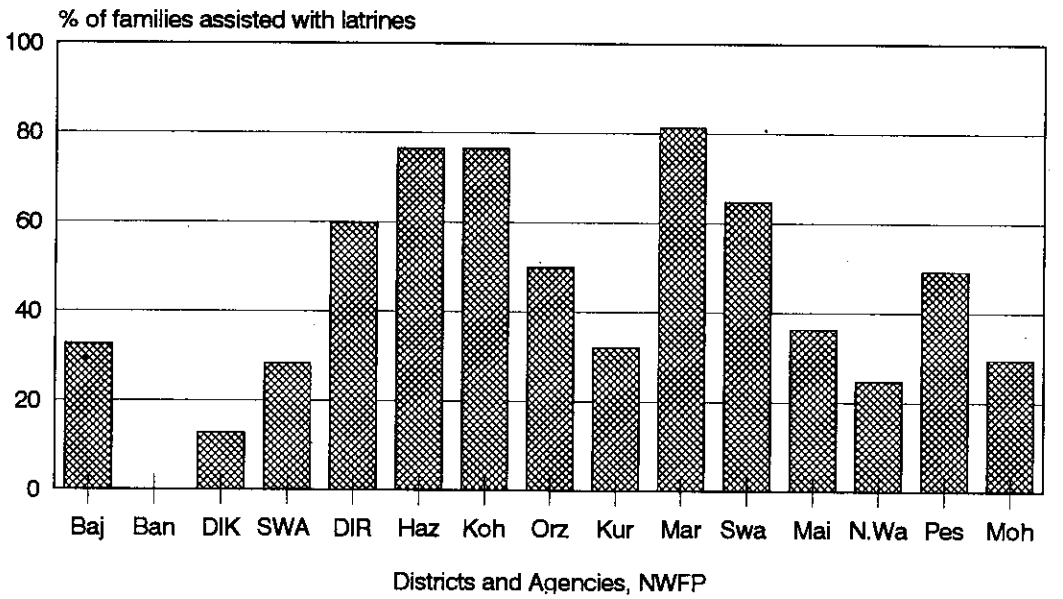
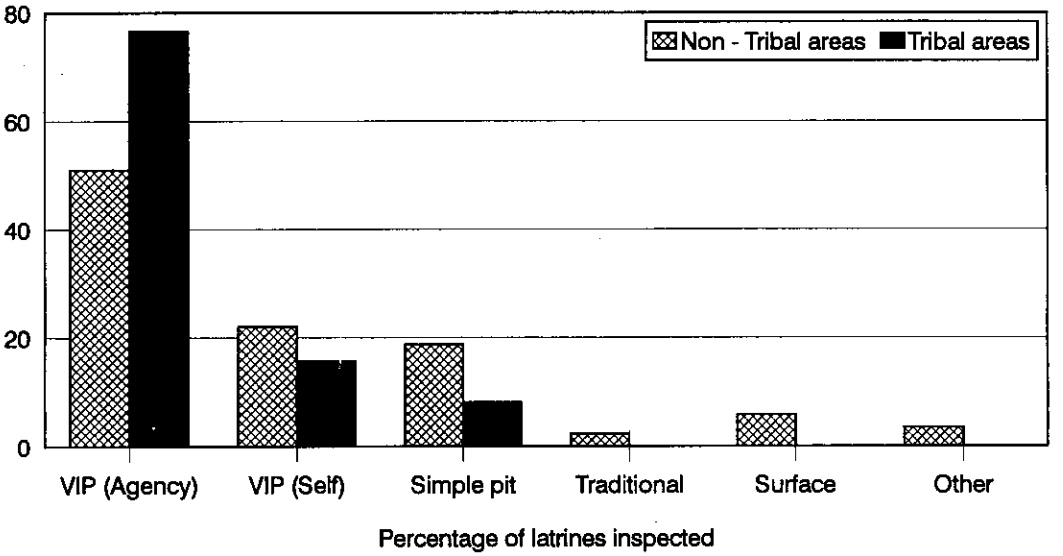


Figure 2. District coverage

The percentage coverage as expressed in Figure 2 represents the number of officially registered refugee families in each district, divided by the number of latrines constructed under the projects since 1981. It does not take into account the reliability of the official figures (probably over-estimated) or the life-span of each VIP latrine. Many of these latrines have also had minor repairs performed by the project during this period.

According to the recent sanitation survey, coverage in these areas is higher than that indicated in Figure 2, for a variety of reasons (see Figure 3). A considerable number of refugee families have purchased their own materials for a VIP latrine locally, and although specifications may vary, the survey found them to be generally satisfactory. Of all families surveyed, approximately 80% had some type of satisfactory latrine. Of those that did not, poverty, migration and absence of male family members were the principal reasons [2].



Results from survey, 1990

Figure 3. Latrine types in RVs, NWFP

4.3 Latrine types (NWFP)

Latrine inspection during the survey has shown that the vast majority of refugee houses in NWFP have a VIP latrine, with the largest percentage in the tribal areas (see Figure 3). A considerable number of refugees had purchased their own materials for the VIP. Simple pit latrines are also common.

4.4 Health knowledge/attitudes

The vast majority of respondents reported that privacy/purdah was the most important benefit of having a latrine. Few associated it with health. However, attitudes towards a VIP latrine were very positive.

VIP latrines were unknown to refugees in Islamic State of Afghanistan before the war, the majority being used to using the open fields for purposes of excretion (see Figure 4).

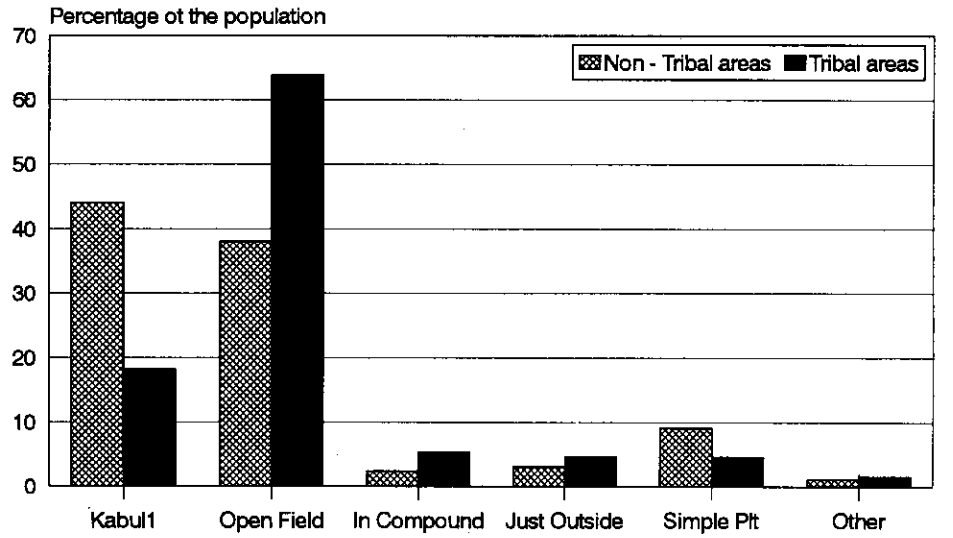


Figure 4. Pre-war latrine habits in Islamic State of Afghanistan

Following experiences with VIP latrines in the RVs, more than 50% of refugees indicated their preference for this type on their return. (See Figure 5.) However, 67% of respondents indicated that they will use human faeces as a fertilizer when they return to Islamic State of Afghanistan, which is not consistent with the use of a VIP latrine.

According to the survey, 95% of households were considered "satisfactorily clean".

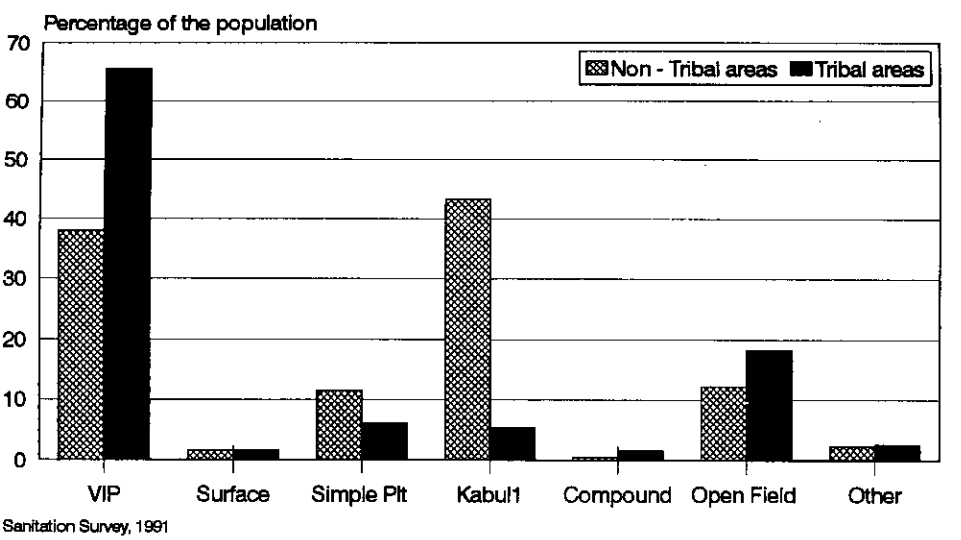


Figure 5. Proposed latrine habits on return to Islamic State of Afghanistan

4.5 Constraints in programme implementation

The main constraints in programme implementation are as follows:

- The Afghan refugee community is governed by a series of constraints which often exclude women from participation in projects designed to improve their well-being.
- Although there is a strong sense of responsibility toward extended families, there is little concept of community development.
- Uncertainty about the future. Refugees tend to consider their stay in Pakistan as temporary.
- Low literacy rates.
- Low income levels. Males are often absent in the war, or working in urban centres.
- Refugee dependence, i.e., they are used to receiving free items.
- Refugee families do not own the land they occupy.
- Security problems in tribal agencies (FATAs).
- Settlements are widely scattered over a large area.
- RVs are often located in unfavourable environments, e.g. waterlogged, sandy or rocky. There are often only poor-access roads, and a lack of readily available water supplies.
- Underdeveloped PHC programmes.
- Poor coordination between the health and sanitation programmes and the water programme.

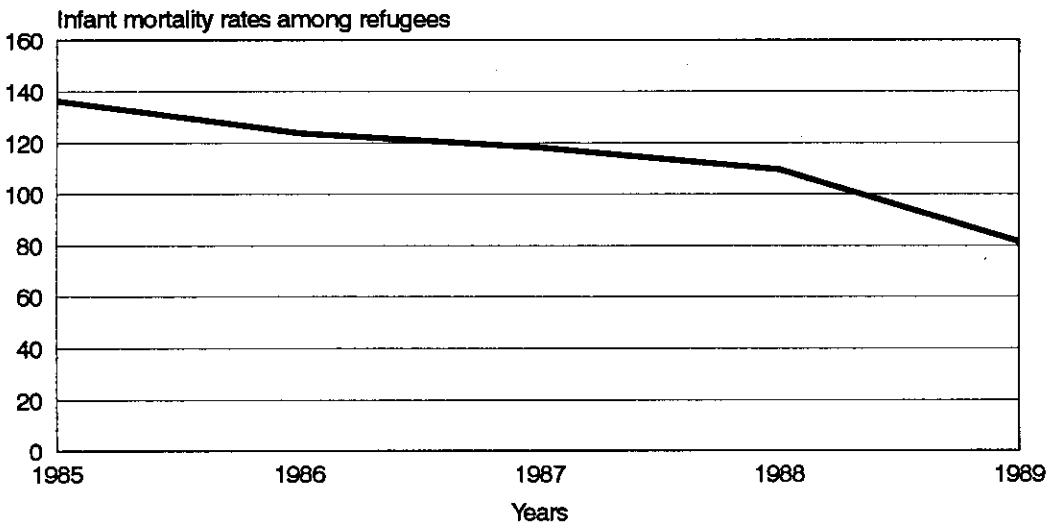
5. Surveillance/outbreaks

In July 1989 an outbreak of diarrhoea occurred in Khehski RV, Peshawar District. This RV was located along a river, with much of the area waterlogged and subject to flooding. 20 000 refugees were registered in the camp. Over a six-week period 7430 cases of diarrhoea were reported, and 18 deaths were recorded. The specific cause of the outbreak was not identified. *Vibrio cholerae* investigations were negative.

No other major outbreaks of sanitation-related disease have been reported in more than ten years of the programme, even though the refugee case-load is so large, often with overcrowding, and with less than ideal sanitation facilities.

6. Health indicators

Surveys conducted by Centers for Diseases Control (CDC) have shown a steady decline in infant and under-five mortality rates among the Afghan refugees in NWFP. (See Figure 6.) The infant mortality rate was 82.3 in 1990 while the under-five mortality rate was 123/1000 live births. These rates are considerably lower than in Islamic State of Afghanistan, or the host country Pakistan. Many factors have contributed to this decline, and include improvements in sanitation and hygiene practices. Diarrhoea-related diseases, however, still remain an important cause of death in under-five year-olds [10].



CDC Survey, 1990

Figure 6. Infant mortality rates among Afghan refugees, NWFP, Pakistan; 1985-1989

7. Water supply

7.1 Background

Water supply for the Afghan refugees is provided through shallow wells, piped schemes, springs and water tankers. The overall goal is to provide adequate and potable water to meet refugee needs. Ideally, 25 litres of water should be provided daily for each refugee. However, because of the non-availability of groundwater in some areas, aggravated by dispersed population and the enormous number of refugees in NWFP, a minimum of 10 to 15 litres per day is provided according to UNHCR policy. In general, all piped water supply to refugees is provided on a community basis; in other words house connections from piped water schemes are not made available to individual refugee families, and private shallow wells or hand pumps are not installed for them. However, many refugee families have installed their own systems.

After the emergency phase of the refugee programme had ended, the priority of UNHCR changed from piped schemes to shallow well improvement, hand pump installation, and spring well development (where sufficient groundwater was available). This emphasis was based on the following considerations:

- Cost-effectiveness in terms of per capita cost in construction and maintenance.
- Application of simple and appropriate technology.
- Encouragement of refugee participation and involvement.
- Reliability: no need for power to pump water.
- Water can be obtained from low-yielding aquifers and stored in wells at night.
- Ideal for scattered populations.
- Technology that can be applied in Islamic State of Afghanistan on the refugees' return.

Piped water schemes are encouraged where there is a high concentration of refugees and water distribution from the storage tanks or standposts can be accomplished with minimal difficulty and financial cost, and where shallow wells or springs are not feasible.

Water is transported by tanker to a number of RVs where no water is locally available, and in emergency situations, e.g. new arrival camps, etc.

7.2 Water programme implementation

The programme is implemented by UNHCR in cooperation with CCAR, the Public Health Engineering Department (PHED) of the Government of Pakistan, and two NGOs, Daccar and International Red Cross (IRC).

CCAR is responsible for operating 18 water tankers in the province. There are currently 93 piped water distribution schemes in operation, fed by water pumped from deep tubewells. These have been developed mostly by PHED, which is responsible for operation and maintenance of tubewell pumps and booster pumps, and Daccar is responsible for maintenance of piped water distribution networks. Most of these schemes have exceeded their designed life-span and require considerable maintenance, as well as being costly to run.

Pumps are predominantly powered by electricity; operational costs therefore consist mostly of electricity charges. In many areas electricity supplies are unreliable, with frequent power blackouts and voltage fluctuations; pumps frequently need repair due to such fluctuations, inadequate maintenance, and because they have exceeded their designed life-span.

Piped schemes were designed with no provision made for standby pumping units. Consequently pump breakdowns can result in piped schemes being non-operational for long period of time.

IRC is responsible for the water supplies in 13 camps in the Kohat/Hangu area.

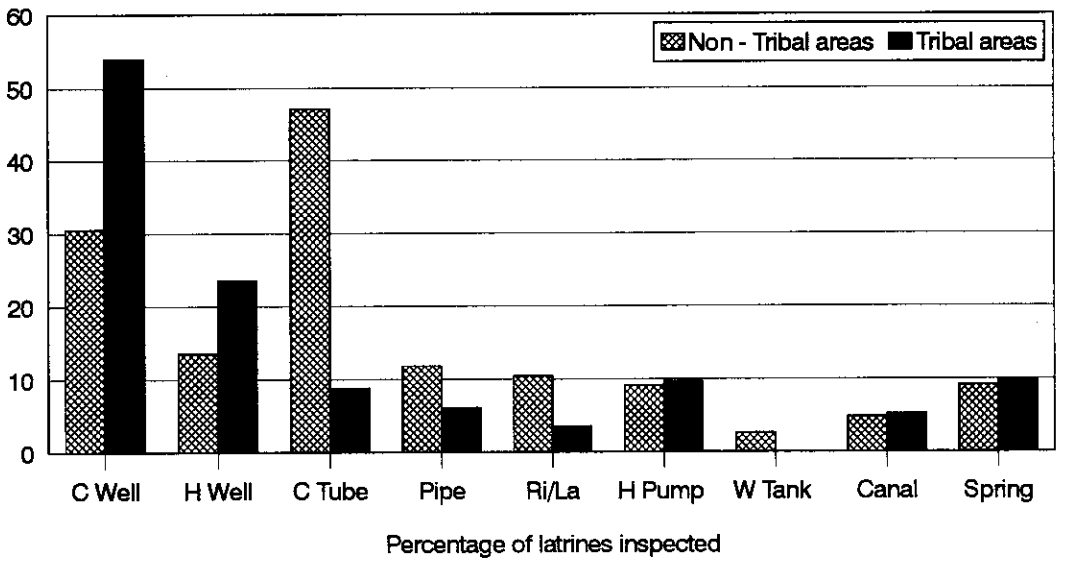
All these operations are financed and monitored by UNHCR.

7.3 Present water sources in RV's

Figure 7 shows the results of the recent survey on water sources in use by the refugee population in NWFP.

There is a considerable difference in water sources between the tribal and non-tribal areas. Piped schemes are more common in the more densely populated RVs in areas close to

Peshawar. Although against the refugee water supply policy, many families have made private connections to the tubewell system.



Sanitation Water Survey, 1990

Figure 7. Water sources in refugee villages, NWFP

Key:
C Well: Communal shallow well
H Pump: Handpump
H Well: Household (private) well
W Tank: Water tanker
C Tube: Communal tube well
Pipe: Private pipe from tubewell
Ri/La: Water from river/lake

8. Malaria/vector control

The basic strategy for malaria control in the Afghan Refugee programme has been:

- Attack on the adult mosquito by means of residual house spraying with Malathion, as is the practice of the Pakistan National Malaria Control Programme.
- Elimination or reduction of mosquito-breeding sites in the refugee villages.
- Active case detection and radical treatment.

Malaria has become a considerable problem among the refugee population in Pakistan. Several factors have combined to produce a higher incidence of malaria in the refugee population as compared to the local Pakistani villagers. Overcrowding, lack of animals, outdoor sleeping habits, and the creation of mosquito breeding areas around refugee houses are the principal causes.

There is also a growing resistance to Malathion by the principal malaria vectors, as well as a developing resistance to chloroquine which is the first-line treatment for malaria in Pakistan.

Malathion, however, seems to be still operationally effective in Pakistan, and was to be reintroduced in 1991 after a break of one year, when fenithrothion was sprayed in selected areas, with limited success [8].

9. References

[1] Guidelines for environmental health services for Afghan refugees in Pakistan. UNHCR/CCAR 1989.

[2] Sanitation survey among Afghan refugees in NWFP. MSF/UNHCR 1991.

[3] Haffenden, F. Evaluation of the "Sanitation and Basic Health" programme of the Austrian Relief Committee for Afghan Refugees in Pakistan. 1984.

[4] Blumhagen, D. Evaluation of the impact of the Austrian Relief Committee Sanitation and Basic Health Programme in Afghan Refugee camps. 1986.

[5] Sanitation Programme for Afghan Refugees in Pakistan. Plan of operations - PDH - March 1984.

[6] Afghan Refugee Health Programme - Operations Manual CCAR/UNHCR - 1986.

[7] Review of the water and sanitation programmes for Afghan Refugees UNHCR Technical Support Service. Geneva - 1990.

[8] Malaria Control Guidelines. UNHCR/CCAR - 1990.

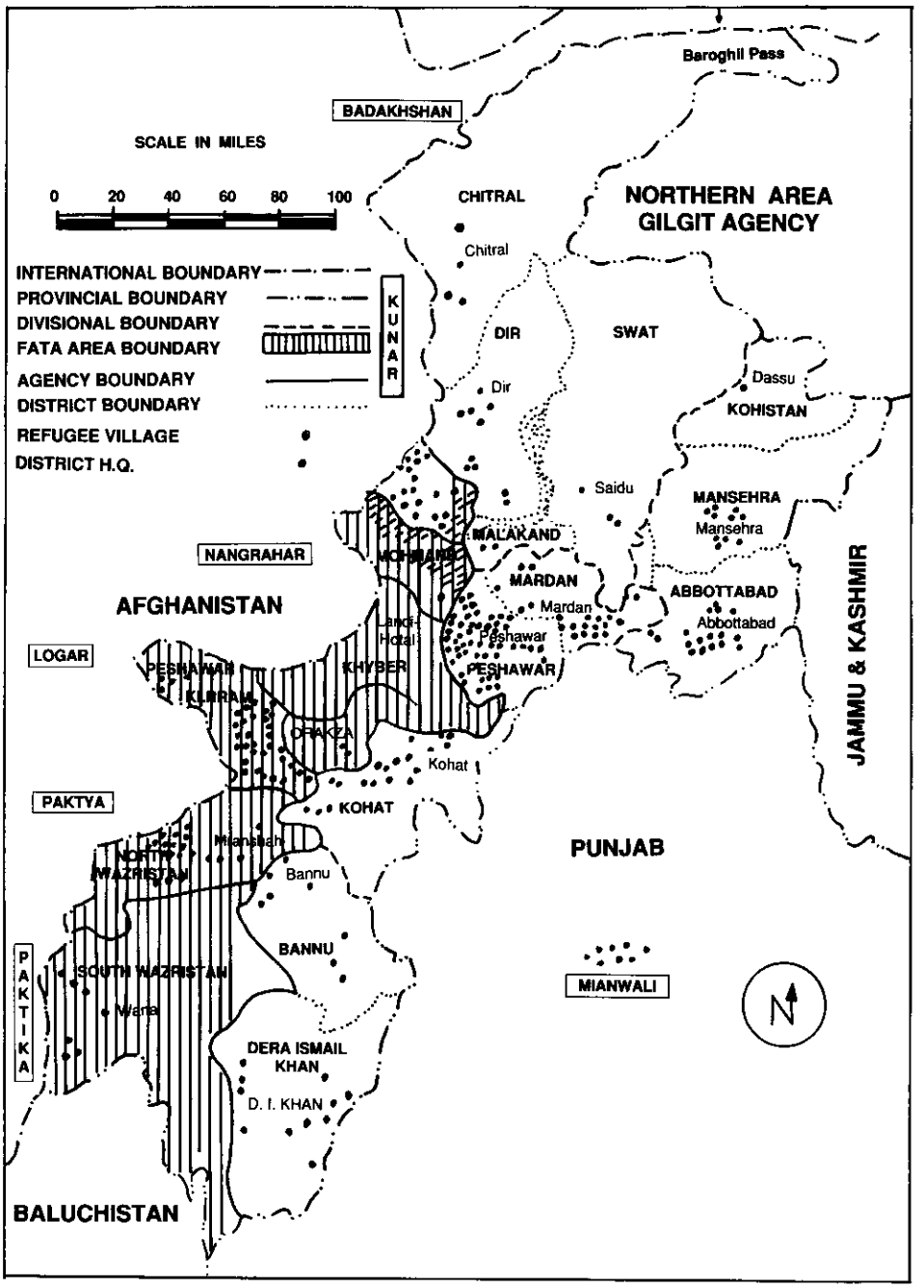
[9] Christensen, H. and Scott, W. Survey of the social and economic conditions of Afghan Refugees in Pakistan. UNRISD 1988.

[10] Tangerman, H. and Parmuk, E. Evaluation of infant mortality and childhood nutritional status among Afghan refugees in Pakistan 1990. Centers for Disease Control - 1990.

[11] Zulueta, J. de. Malaria among Afghan refugees in Pakistan. UNHCR, 1989

Annex 1

Location of Afghan Refugee Villages in North West Frontier Province, Pakistan



Annex 2

Latrines Constructed in Refugee Villages by UNHCR/VOLAGS/UNICEF 1981 to 1989

DISTRICT/ AGENCY	VOLAGS	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL/ AGANCY PER DIST.	TOTAL PER DISTRICT	POPU- LATON PER DIST.	NUMBER OF FAM./ DIST.	No. OF. FAM. PER LATRINE	PERCE- NTAGE COVERAGE
BAJAUR	UNICEF			5.006		1.754	278					7.038	9.142	195.893	26.025	3.07	32.62
	PRC										2.129	2.104					
BAMMU												0	0	72.162	10.374		
D.I.KHAN										1.594				86.864	12.923	5.78	17.30
SOUTH WAZIR	PRC											1.594	1.594	58.208	9.215		
															21.390	3.42	29.25
DIR/ CHITRAL	UNICEF			3.768	810							4.578	6.256	123.528			
	ARC				336						1.362	336					
	PRC											1.342					
HAZARA	SALVATION																
	ARMY			352		40						392	19.975	212.490	33.505	1.68	59.62
	ARC		2.323	2.324	764	5.615	2.501	1.206	4.246	6.4		19.583					
KOHAT	ARC				7.830					3.482	850	7.830	24.480	231.340	32.077	1.31	76.32
	IRC					1.267	4.440	3.317	3.294			16.650					
ORAKZAL	IRC							500	500			1.000	1.000	13.417	1.983	1.98	50.43
KURRAN	UNICEF				4.127	703	2.492					7.322	15.970	347.781	50.703	3.17	31.50
	PRC						1.322	2.651	2.648	1.952	75	8.648					
MARDAN	RD/M	7.123	1.161									8.284	14.570	102.949	17.193	1.18	84.74
	ARC				1.960	1.971		1.214	1.41		475	6.286					
SWAT	UNICEF						1.623					1.623	1.623	13.793	2.488	1.53	65.23
	ARC				2.560							2.560	2.850	51.850	7.306	2.56	39.01
MALAKAND										290	899	290					
N.VAZIRISTAN	PRC							2.555	3.268	537		6.360	6.360	176.682	24.704	3.88	25.74
PESHAWAR	ED/M	1.750	3.114									4.864					
	ARC			3.875	7.150	8.200	3.626	6.022	3.028	6.827	3.014	41.742					
	ISRA				654							654	48.480	506.975	99.371	2.05	48.79
	UNION AID	350										350					
	PRC									870		870		15.555			
MOHAMD	UNICEF											622	722		2.537	3.51	28.46
	PRC					622			100			100					
		9.223	6.598	15.325	15.325	26.15	16.282	17.465	18.225	16.156	8.804	153.022	153.022	2.029.487	353.794	2.31	43.25

Annex 3

Achievements of UNHCR-Funded Sanitation Projects in 1990
Material distributed/health education sessions

AGENCY	SLABS	COVERS	PIPES	SCREEN	SOAP	FAMILIES VISITED	FEMALE ATTENDANCE	SCHOOL AND BHU SESSIONS
ARC	4 388	4 708	5 107	6 070	10 057	7 131	24 023	--
PRC	3 566	3 145	5 151	4 526	26 924	11 787	57 049	1 468
IRC	850	1 262	1 410	6 123	--	--	--	5 879
Total	8 804	9 115	11 668	16 719	36 981	18 918	81 072	7 347

General features of the refugee problem: The role of UNRWA

N. Shalbak

1. Introduction

UNRWA, the United Nations Relief and Works Agency for Palestine Refugees in the Near East, began operations in May 1950 as a temporary organization to give emergency assistance to the hundreds of thousands of Palestinians displaced by the 1948 conflict in the aftermath of the establishment of Israel. Its mandate, deriving from a resolution adopted by the United Nations General Assembly in December 1949, has been renewed repeatedly.

Forty years later the Agency was still in active existence because the Palestine question had not yet been resolved. Its temporary nature, combined with what had become long-term commitments to refugees and staff, was giving rise to chronic problems.

2. Functions

Pending a solution to the Palestine question, UNRWA continues to provide essential education, health and relief services to Palestinian refugees living in Jordan, Lebanon, Syrian Arab Republic, the West Bank and the Gaza Strip. UNRWA's largest programme is in education, consuming about two-thirds of the annual budget, followed by health (20%) and relief (10%).

The crucial need for UNRWA's humanitarian work has been reinforced by subsequent events in Lebanon and the Israeli-occupied territories, the West Bank and Gaza.

3. Field operations

UNRWA's operations are in five "fields": Jordan, Lebanon, Syrian Arab Republic, the West Bank and the Gaza Strip (See Annex 1). Operations are supervised and supported by the Organization's Headquarters in Vienna, with a branch office in Amman, and liaison offices in Cairo and at UN Headquarters, New York.

Each field office is composed of: a Director and Deputy Director; sections responsible for education, health and relief programmes, finance, administration, supply and transport; a legal consultant and a public information officer (Ses Annex 2 and 3). A few international Headquarters staff are based in the field. In the West Bank and Gaza, international staff have been added as refugee affairs officers since early 1988.

The principal activities of the Agency involve providing education, health and relief services to eligible registered refugees. In order to be registered, a Palestine refugee must be a person whose normal residence was Palestine for a minimum of two years before the outbreak of the 1948 conflict and who, as a result of that conflict, lost both home and means of livelihood. This definition has been expanded to include the descendants of refugees who met those requirements.

4. Staff

During the Agency's first year, UNRWA's work was carried out by some 6000 employees: 133 international and 5840 local staff, most of the latter being Palestinian refugees themselves. UNRWA now has a staff of just over 18 000 which makes it one of the largest employers in the Middle East. As in its first year, the vast majority of these staff members are Palestinians.

The greatest number of employees - approximately 12 000 - are involved in the Agency's education programme. Other staff members are in health (3325), in relief (597) and in other sectors - finance, supply, transport, personnel, etc. (1910).

5. Finance

UNRWA's regular operations - as well as its emergency programmes - are financed by voluntary contributions from the international community. Some 70 governments, the European Community and various intergovernmental, nongovernmental and voluntary organizations contribute regularly to UNRWA. In addition, the host countries provide services directly to the refugees.

At its inception, UNRWA had allocated just over US$300 000 to education, with the remainder of its initial US$35.8 million budget going to relief work. Today, education accounts for just over a half of UNRWA's total expenditure, which was budgeted at US$230 million in 1990.

However, UNRWA's progress has been offset by financial crises. It has been estimated that the Agency requires an annual increase in funding of approximately 5 per cent, taking into account natural population growth and inflation, simply to maintain its basic activities at an unchanged level. However, contributions to the Agency rarely reach this minimal growth rate.

6. The Palestinian refugee problem

The three classical solutions to refugee problems are: repatriation, emigration from the country of first asylum, and integration.

The Palestinians who left or were driven from their homes after the establishment of the State of Israel in May 1948 saw themselves as very temporary absentees. For them there was but one solution: repatriation.

There were overwhelming humanitarian reasons in favour of repatriation. Yet repatriation on any significant scale, however desirable, was not to be. The provisional Government of Israel had rejected, on security grounds, the proposal of the United Nations Mediator on Palestine to permit the refugees to return to their homes.

Neither was emigration an available option. A large body of mostly illiterate peasant farmers had little to offer to the traditional countries of emigration in the Americas and Australasia. In any case, emigration would have been a denial of the right to repatriate and was emphatically rejected by the vast majority of Palestinian refugees.

Integration, i.e., resettlement in the host countries, remained as a viable solution. However, as a definitive solution this also was anathema to the refugees, although they were willing to work if work were available.

7. The early years of UNRWA

Meanwhile, the United Nations General Assembly was morally bound to respond to the most immediate needs of the refugees. The General Assembly therefore decided to establish a temporary organization - the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) - which would assume operational responsibility for providing relief services and, concurrently, implement constructive measures, with a view to the termination of international relief assistance.

The constructive measures were to be "work programmes" designed to provide gainful employment for large numbers of refugees.

UNRWA's first "constructive measures" in 1950 were road building and afforestation. However, they employed only 12 000 persons; it proved more costly to keep a man on temporary employment on public works than on relief.

UNRWA explored large-scale projects, such as the Yarmuk-Jordan Valley project and the Sinai Desert project but, in the absence of an acceptable solution to the Palestine question, the great mass of the refugees remained opposed to such projects, linking them with resettlement and abandonment of hope for repatriation. In addition, the physical resources of the host countries were meagre and UNRWA was never provided with sufficient funds.

In 1959, it was time to take a fresh look at the role of UNRWA. It was apparent that the Organization was all the more essential to maintain the standards of refugee well-being that had been achieved. The General Assembly extended its mandate, directing the Agency "to continue its programme of relief for the refugees and, insofar as is financially possible, expand its programme of self-support and vocational training".

To a very large extent this extended mandate set the policy for UNRWA's operations for the next two decades. The "programme of relief" at that time comprised all UNRWA's activities except education and training.

8. Emergency programmes

UNRWA entered its fifth decade confronting emergency situations in three of its five fields: the Gaza Strip, the West Bank and Lebanon. Toward the end of 1989, the special programmes which UNRWA had already established to deal with these emergencies were, for budget purposes, combined under the label "Emergency Measures in Lebanon and the Occupied Territories (EMLOT)".

8.1 Lebanon

While Lebanon accounts for just over 10% of UNRWA's operations, it has been a preoccupation of the Agency over the past fifteen years of civil strife in that country. On two occasions, UNRWA launched special international appeals to raise funds for emergency programmes to assist people whose houses had been destroyed and whose lives had been shattered by this pervasive conflict.

Apart from paying for the repair and reconstruction of damaged or destroyed Agency facilities in Lebanon, the emergency funds have gone towards the distribution of relief supplies - food, clothing, mattresses, blankets, kitchen kits - as well as for medical treatment, including hospitalization.

Over the longer term, grants have been provided to help refugees to repair their shelters. Special emphasis has been given to displaced persons; some non-refugee Palestinians and Lebanese have also been assisted when they have been displaced to refugee areas.

8.2 Occupied Territories

UNRWA's immediate response to the conditions created by the *intifada* were dictated by the measures employed by the Israeli army and authorities to suppress the uprising: the use of firearms, beatings and tear gas which caused extensive casualties - including hundreds of fatalities - among civilians; demolition of houses, lengthy curfews and closures of camp entrances and pathways, travel restrictions and the imposition of ID-card requirements for workers employed in Israel.

The Agency's initial response was in the medical field. UNRWA health centres, suddenly overwhelmed with casualties from violent clashes with the military, were kept open round the clock and staffed with additional doctors and nurses. They were also provided with specialized equipment for dealing with gunshot wounds and other severe injuries.

Since refugee areas were frequently placed under long and strict military curfews, shortages of food supplies also became a problem which UNRWA addressed by expanding its supplementary feeding programmes and facilitating the entry of donated food supplies into closed areas when possible. An additional 29 000 people in Gaza and 10 000 in the West Bank received supplementary feeding from UNRWA.

8.3 UNRWA's response

8.3.1 Extraordinary measures

The extraordinary measures introduced in 1988 were maintained and further expanded during 1989. They included, *inter alia*, the following:

(a) Expansion of the midday meal programme to an additional 18 000 children.
(b) Expansion of powdered milk distribution to an additional 12 000 children.
(c) Expansion of the dry food ration programme to all pregnant women and nursing mothers.
(d) Allocation of additional budgetary provisions to meet hospitalization costs resulting from the emergency.
(e) Establishment of additional medical teams (each composed of a medical officer and a nurse) to keep UNRWA clinics operating till late hours in large camps.
(f) Upgrading equipment and provision of additional health manpower.

The immediate measures taken by UNRWA in response to the new situation created by the *intifada* were based on a report on conditions in the Occupied Territories submitted to the United Nations Security Council on 21 January 1988 by the then UN Secretary-General, Dr Javier Perez de Cuellar.

Requested in that report to submit proposals for emergency measures to alleviate the conditions of Palestinians in the Occupied Territories, UNRWA devised a special programme comprising measures that the Agency could undertake without delay. UNRWA identified four areas where it could best respond, within the context of its mandate, to assist the affected population:

(1) The provision of a greater degree of protection to the refugees, through an increase in UNRWA's international field staff;
(2) The extension of emergency relief to those in need, including Palestinians not registered with UNRWA, where necessary, on a strictly emergency basis and as a temporary measure.
(3) Improvement of camp infrastructure, including roads, sewerage facilities and water supplies, shelter repairs, expansion of health and educational facilities and services and maintenance of Agency installations.
(4) Action to improve the standard of living of the population of the Occupied Territories by expanding existing income-generating projects and other economic and social initiatives to be coordinated with other agencies and programmes of the UN system.

The expanded relief effort and the improvements in living conditions for camp residents represented an expansion beyond UNRWA's regular programmes in the Occupied Territories and, therefore, required special extrabudgetary funding.

For the Expanded Programme of Assistance (EPA) in the Occupied Territories, a target figure of US$65 million was set for a period of three years, of which about US$30 million had been received or pledged by the end of 1989.

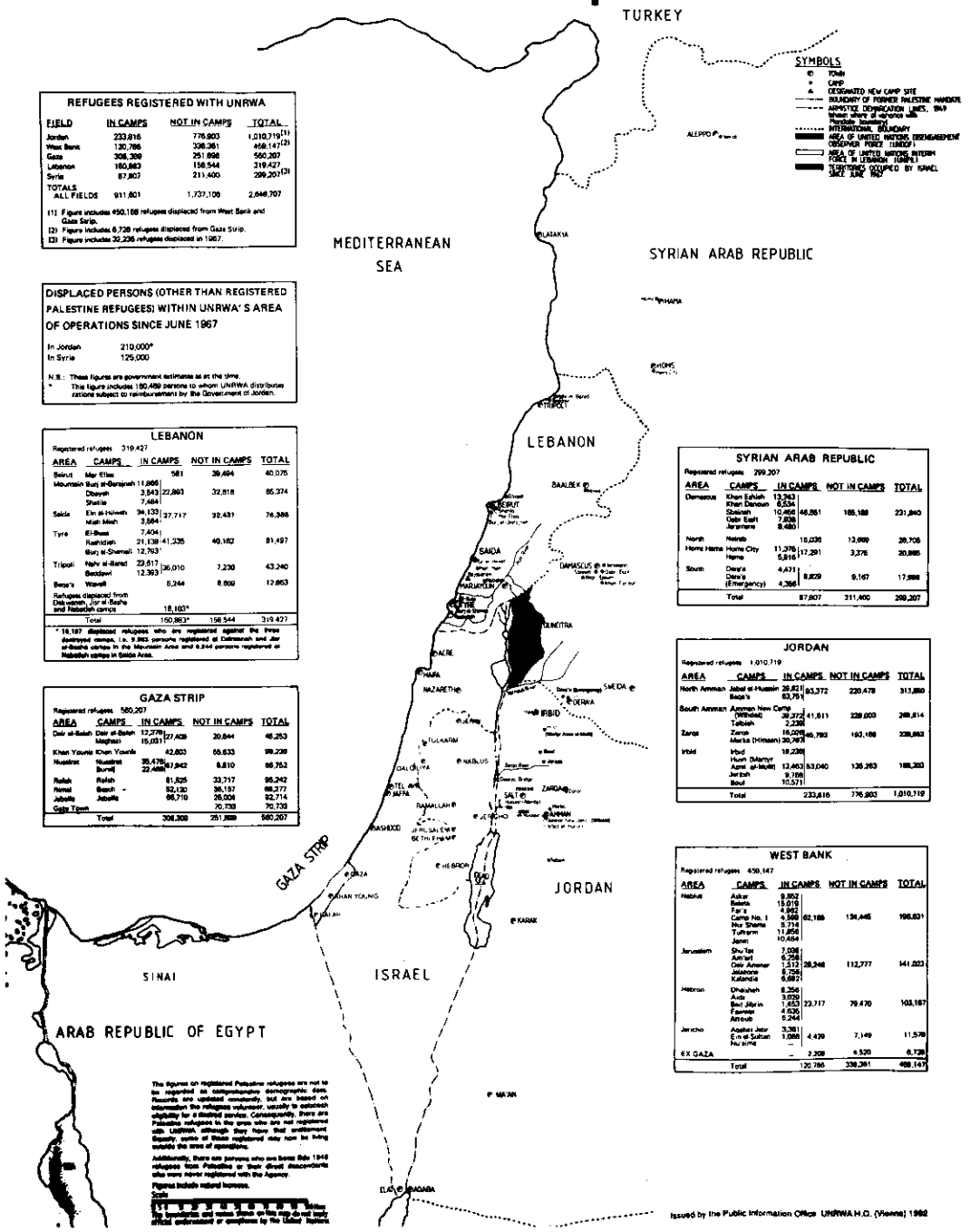
A high priority of the EPA is to ensure that refugees living in the 27 camps of the West Bank and Gaza Strip have decent shelter and a sanitary environment. Accordingly, substantial efforts were made to repair refugee shelters and upgrade the quality of accommodation. By

mid-1989 UNRWA social workers had completed preliminary surveys and had begun preparing detailed information on the families to be assisted.

Another part of this programme will help alleviate the serious shortage of drinking water in the Gaza Strip. Desalination plants will be built and sewage treatment facilities upgraded or expanded.

Also included under EPA are projects for new and improved health facilities and women's programme centres, expanded self-support and income-generating schemes and increased training and scholarship possibilities. In addition, with separately solicited special funding, UNRWA hopes to build a 200-bed general hospital in Gaza at an estimated cost of US$35 million.

Annex 1
UNRWA's Area of Operations



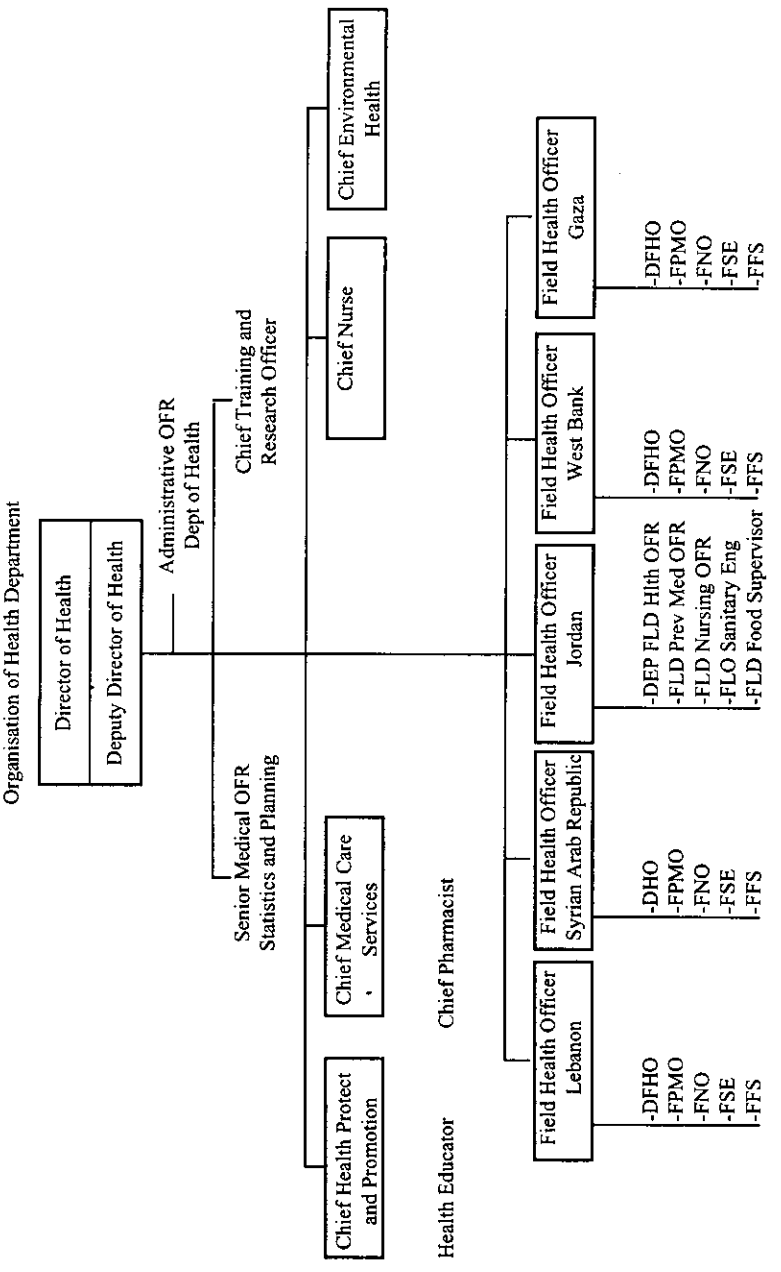
Annex 2
Organizational Structure of UNRWA

* New York and Cairo

** Solid line indicates normal reporting channel. Broken line indicates direct reporting line to Commissioner-General and Deputy Commissioner-General which is also available to Directors of Education, Health and Relief Services and Field Office Directors when the need arises.

*** Coordination of the work of Finance, Personnel and Legal Departments effected by Deputy Commissioner-General.

Annex 3
Organizational Structure of UNRWA's Health Department



Development of national capability for environmental health management in refugee areas

O. Sperandio

1. Introduction

Experience has shown that refugee relief is a process involving the setting and enforcement of policies, establishment of special institutional arrangements and development of the ability to handle a wide spectrum of activities related to social, administrative and technical aspects. Refugee relief has to be supported by adequate policies and resources and to be effective in operational planning, emergency funds arrangements, stockpiling and distribution of supplies, establishment of appropriate social and public health/sanitary services and education of the refugee population.

Refugee assistance normally requires the active participation of several national agencies and must be dealt with by a multidisciplinary and intersectoral approach with inputs from different types of professionals, technicians and auxiliary personnel. Regarding specifically environmental health management, the health sector, water supply and sanitation institutions and environmental protection agencies are expected to participate actively in the overall collaborative effort for refugee relief; to do so they must have the ability to plan, implement and evaluate the corresponding interventions required to improve environmental conditions.

The ability of a sector to play its expected role effectively will be directly related to the availability of well-trained and experienced staff. Training activities, properly combined with information exchange, will be instrumental in enhancing ability to cope with the multiple conditions derived from refugee situations.

The fact that in some countries a major part of refugee relief operations is under the responsibility of international agencies, such as UNHCR and UNRWA, does not preclude the need to have a multisectoral national capability to deal with refugee and refugee-related situations.

2. The need for specialized expertise

Refugee relief is a complex subject and national as well international personnel involved in relief assistance operations need to be prepared to deal with special situations.

A sudden influx of refugees implies an emergency situation for a region of a country; when specialized advice is not available decisions will often be made on the basis of improvisations and remedial measures delivered in a fragmented way. As a result, precious time can be lost, resources wasted and effective interventions to safeguard the health and

well-being of the affected refugee population may not be taken. An unprofessional approach can have disastrous consequences for the refugees.

The arrival of refugees normally results in an increase in demands for food, shelter and basic services such as health care, water supply and waste disposal. Personnel from the health sector, water supply and sanitation institutions and environmental protection agencies are expected to play an important role in the planning and implementation of environmental-health-related activities in programmes for assistance to refugees. This implies the participation of a wide spectrum of professionals, technicians and administrative personnel such as public health/sanitary engineers, medical officers, technical officers, sanitarians, community health workers, municipal employees, water supply systems operators and caretakers, etc.

Field staff working with refugees need knowledge and skills in many domains. These include not only technical and administrative matters but also ways to motivate refugee participation and involvement in the implementation of environmental health activities, such as construction and operation of small water supply schemes and excreta disposal facilities as well as in aspects related to solid wastes management, vector control, safe food handling and shelter hygiene.

Technological approaches to refugee situations will have to be developed and used to cope with special situations; engineers, sanitarians and community health workers must be prepared to propose innovative solutions and to make use of recent technological advances, mainly in areas related to waste disposal.

The "know-how" needed to deal with refugee or refugee-like situations can only be developed through appropriate training, information exchange and field experience.

3. Institutional arrangements

Countries that have to deal with large numbers of refugees normally establish specific institutional arrangements. Some countries prefer a more centralized set-up, having an institution which deals directly with most refugee problems, in coordination with external support agencies. Others have a more decentralized operational procedure, with a central coordinating body but with a much wider participation of several ministries and specialized agencies in the planning and implementation process.

In most countries hosting refugees the health ministry plays an important role, working in coordination with external support agencies. Quite often the national and regional water supply agencies are directly involved in refugee relief, mainly in cases of older-established refugee settlements in which improvements in the water supply and sanitation services are being planned and implemented.

In Somalia, for example, the Refugee Health Unit, within the Ministry of Health, coordinates health services for refugees, including those related to environmental health. Assistance for water supply activities is provided through the Refugee Water Supply Division. The Government's Water Development Authority has an active role in the development of water supply projects for refugee camps [1].

In Islamic Republic of Iran there is a Council for Afghan Refugees, and technical projects are implemented by the appropriate ministries under an agreement between the Council and UNCHR[2].

In Sudan there is an Office of the Sudanese Government's Commissioner for Refugees. NGOs have played an important role in the development of water supply schemes for refugees in coordination with the National Corporation for the Development of Rural Water Resourc[3].

In Jordan many of the refugee settlements are now served by the water supply systems of neighbouring communities and the responsibility for the service lies with the national water supply agency, the Water Authority of Jordan. The Ministry of Health has a supervisory role regarding water quality control and UNRWA environmental health staff collaborate in the supervision of the proper use of services and in aspects of operation, maintenance and expansion of the distribution networks [4, 5].

In the countries of the Eastern Mediterranean Region facing refugee situations, external support agencies (ESAs) play a very important role in refugee assistance. In Sudan, for example, there are more than 40 ESAs assisting refugees of which more than half provide assistance in health care and /or water supply [3].

In each country special arrangements have been established to define the scope of the international cooperation provided by multilateral, bilateral and voluntary agencies. Efforts have been made to have an institutional set-up that makes possible the best use of the resources available at national and international level, to facilitate coordination and cooperation and to avoid duplication and overlapping. The objective is that all those involved "should have clearly defined responsibilities within a single overall programme, whether the aid is provided through multilateral or bilateral channels"[6].

4. Human resources development

In countries where governmental institutions already have a serious shortage of specialized manpower, the additional demand generated by refugee relief operations represents a major problem. National and international agencies involved in refugee situations recognize that human resources development is for them a high priority.

Human resources development normally encompasses education, training, information exchange, long-range planning for personnel needs, recruitment and selection of personnel and personnel management policies. For those responsible for environmental health interventions in refugee situations it is important to analyse how human resources development can be accomplished in the light of the limited resources available. Such development should be a continuous process and not a sequence of a few isolated training activities.

In the overall scenario for human resources development for environmental health in refugee situations, emphasis has to be given to training and information exchange. The main objective of training is to upgrade personal and institutional capability to handle properly the environmental health problems derived from refugee movements and settlements. Training will enable individuals to carry out specific tasks based upon an accepted methodology, using the technological knowledge available, and to have confidence in their own skills to lead others and direct their work. Training can only be achieved by instruction and practice; the approach

of participatory training in which trainers and trainees are actively involved in the learning process should be taken into account. A multiplier effect can be obtained by "training of trainers".

The availability of reference materials, manuals and guidelines can also contribute to a higher degree of efficiency.

During the last three years the writer of this paper visited several countries of the Eastern Mediterranean Region. Contacts with national agencies having responsibility for environmental health interventions in refugee situations showed that any additional effort by the international community to cooperate in human resources development, mainly through training and information exchange, would be welcome[7].

5. Development of national capability

The development of national capability for environmental health management in refugee areas can be achieved by a well balanced programme including institutional strengthening, human resources development, resources mobilization and public education. To some extent the upgrading of national capability to manage refugee situations will help to enhance the capacity for response to other emergency situations caused by natural and man-made disasters.

A good example of a programme for the development of capability in aspects related to environmental health management in refugee situations is the development of a joint project by the World Health Organization (WHO), the United Nations Environment Programme (UNEP) and the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) [8]. The three agencies launched a programme aimed at the training of UNRWA and national staff with responsibility for environmental health interventions in Palestinian refugee camps in Jordan, Lebanon, Syrian Arab Republic and the Occupied Territories (West Bank and Gaza). The programme is being executed by CEHA, the WHO Centre for Environmental Health Activities for the Eastern Mediterranean Region. In addition to training courses for engineers, sanitarians and field officers, the project prepared a manual on environmental health procedures in Palestinian refugee camps. The planning of the human resources activities for the programme was based on a review of human resources available and on an assessment of training needs. The training activities were planned and developed with full participation of trainers with field experience, engineers and senior sanitarians; they included aspects of information exchange involved in starting a process to foster the exchange of experiences and the circulation of technological information with the cooperation of CEHA's information system, CEHANET[9].

The development of capability in environmental health management in refugee situations has to be addressed to a wide audience, not only to professionals and technicians working directly with refugees but also for those working in institutions that participate in support operations. Refugee movements, their settlement and eventually their repatriation are processes involving a wide spectrum of decisions and interventions.

Efforts to upgrade capability should be realistic and should respond to real needs and available resources. It is better to have a modest programme that can be fully implemented than to plan an ambitious one that may not be feasible due to lack of resources.

The scope of a programme to enhance abilities, both personal and institutional, to solve problems related to environmental health in refugee situations will depend on the level of knowledge already available and on the the objectives to be accomplished according to a established time-frame. When planning a programme, some basic information will be needed; if this information is not available a rapid assessment has to be carried out.

The following measures should be considered when planning a programme to strengthen capability in environmental health management in refugee situations:

5.1 Situation analysis

Collection and analysis of information on:

- policies, legislation and guidelines related to environmental health in refugee situations;
- institutional arrangements and human resources available for environmental health in refugee areas;
- past and present activities related to institutional strengthening and human resources development (training events, in-service training etc.);
- other pertinent information on human resources development activities related to refugee relief, to ascertain whether they incorporate basic concepts of environmental health (as for example training of community health workers);
- resources available for institution/manpower development;
- learning materials available, developed in the country and abroad; and
- current practices in information exchange on subjects related to environmental health in refugee situations.

5.2 Programme proposal

After analysis of the situation and in the light of the detected needs and resources available, a programme proposal could be prepared, taking into account *inter alia*, the following points:

- new institutional arrangements to strengthen performance and capacity for delivery of services;
- training activities for environmental health staff working in refugee camps, to upgrade knowledge on managerial and technical aspects;
- training activities on basic concepts of environmental health for other categories of personnel working in refugee areas;
- training activities on environmental health management in emergencies with emphasis on refugee situations, for professionals and technicians working in public health, environmental protection and water supply and sanitation agencies operating in areas where there are refugee movements and/or refugee settlements;
- preparation of learning materials, manuals and guidelines related to environmental health management in refugee situations;
- preparation of materials for distribution to the refugee population to enhance health education;

- proposal of a plan to foster information exchange; and
- proposal for analysis and updating of post descriptions for environmental health personnel.

The above points can be expanded in the light of local conditions. Implementation of the activities will have to be planned, taking into account a well-defined time-frame and the resources available. In some cases resources will be limited; priorities should be set according to needs.

6. Final comments

Many efforts have been made during recent years, by national governments and international agencies, to provide relief assistance to refugees. As part of the overall assistance provided, much attention has been given to environmental-health-related matters, but it is recognized that there are still many deficiencies regarding environmental health conditions in refugee areas. It is known that, if such conditions are ameliorated mainly through further improvements in shelter, water supply, waste disposal, food hygiene, vector control and drainage, both the quality of life and the health status of the refugee population can be greatly upgraded.

Approaches to strengthening national capability in domains related to environmental health in refugee situations may vary from country to country, according to existing institutional arrangements, the human resources available and the present level of capability.

Activities to develop capability in environmental health matters should be properly linked, through coordination and cooperation mechanisms, with other actions for refugee assistance. Since most of the countries hosting refugees have adopted the "health for all" and "primary health care" principles and approaches, any programme to enhance capability in environmental health should be linked with the overall health care implementation process.

The question of information exchange, which is highly important in upgrading capability, has been mentioned in the preceding pages. No further elaboration on this subject is made in this document due to the fact that a separate paper, devoted to it, has been prepared for the Workshop.

7. References

[1] United Nations High Commissioner for Refugees. *Fact Sheet: Somalia.* Geneva, UNHCR Public Information Service, 1990.

[2] United Nations High Commissioner for Refugees. *Fact Sheet: Islamic Republic of Iran.* Geneva, UNHCR Public Information Service, 1990

[3] United Nations High Commissioner for Refugees. *Fact Sheet: Sudan.* Geneva, UNHCR Public Information Service, 1990

[4] Abdullah, M.A. *Environmental Health Services in the Refugee Camps in Jordan.* Dundee, University of Dundee, 1984. Unpublished.

[5] United Nations Relief and Works Agency for Palestine Refugees in the Near East. *Annual Report of the Director of Health - 1987.* Vienna, UNHCR, 1988.

[6] United Nations High Commissioner for Refugees. *Handbook for Emergencies.* Geneva, UNHCR, 1982.

[7] Sperandio, O.A. *Visit to Eastern Mediterranean Countries - Progress Report No. 2.* Geneva, 1988. (Unpublished).

[8] Lauriault, P. *Report on the Meeting of UNRWA's Sanitary Engineers.* Amman, 1989. (Unpublished).

[9] Sperandio, O.A. *Information Exchange (Notes for the Meeting of UNRWA's Sanitary Engineers).* Amman, 1989. (Unpublished).

Training in information exchange on environmental health management in refugee areas

O. Sperandio

1. Introduction

Information in environmental health - as in other fields - is the record of knowledge and experience, gathered over the years, based on successes and failures.

Information exchange represents a systematic effort to provide selective and adequate information. It involves securing, selecting, processing, storing and disseminating information to reach certain objectives and to meet specific needs.

Information exchange should not be seen only as a way of providing managerial and technological information to high-level officials; it should also be viewed as a process to ensure the flow of information on social, educational, administrative, managerial and technological aspects to concerned persons at institutional and community level. In spite of this overall objective, the scope of information systems should be very well defined; quite often they are established to provide services in specific areas to a certain group of users.

To be really effective, information exchange should work as a two-way process: users of information are expected to produce information and some procedures are needed to ensure feedback.

Information should always be collected and distributed for a recognized purpose. The type of information needed and the mechanisms for information exchange can vary greatly, according to the objectives of the whole process. Information exchange has a cost and all information exchange systems should take into account the cost/benefit of their operation.

There are several ways to foster information exchange: through the collection and dissemination of select information, through the systematic preparation and distribution of documents such as reports, information notes, newsletters, etc., and through education and training activities.

The overall concept of information exchange is based on the principle of having the right information at the right place, available for the user at the right moment.

2. Information on environmental health

There is a considerable amount of information on environmental-health-related matters. Its volume is growing rapidly; the amount of data and experience available for use had expanded considerably in recent years, mainly due to the momentum generated by the International

Drinking Water Supply and Sanitation Decade and to the growing worldwide interest in issues related to environmental protection. Unfortunately, a great part of this information does not circulate in an appropriate way; professionals and technicians in developing countries still have limited access to information that would be of great use to them.

National and international agencies are nowadays moving towards a new attitude regarding information exchange, trying to establish mechanisms and procedures to enhance the flow of information, taking into account institutional and individual needs. The establishment of some national and international reference centres and also of some international "information networks" is making possible good progress in information exchange on environmental-health-related matters [1].

Annex 1 gives a list of sources of information on environmental health subjects.

3. Environmental health in refugee areas - information exchange

Environmental health conditions in refugee areas may vary greatly from country to country and even from camp to camp.

Solutions for environmental health problems in refugee areas can be deeply influenced by several factors. These include: the characteristics and idiosyncrasies of the refugee population, the social and economic conditions of the region where the refugees settle, the environmental conditions, the policy of the host government towards refugees, the type of assistance provided by external support agencies and the refugees' attitudes and behaviour. Conventional technologies may not prove appropriate for refugee settlements and quite often the solution of environmental problems requires the adoption of innovative approaches [2].

Much has been done by national and external support agencies to solve environmental health problems in refugee situations and a wealth of knowledge and experience has accumulated. Unfortunately, much of the experience amassed in many years of work has not been documented; in some cases, very good documents on studies and assessments have been prepared but, due to restricted circulation, they are not available to many interested parties.

Efforts should be made, at both national and international level, to eliminate constraints hindering the process of information exchange on environmental health in refugee camps. CEHA, the WHO Centre for Environmental Health Activities for the Eastern Mediterranean Region, can play an important role in the strengthening of the information exchange process.

A bibliographical search carried out in 1988, sponsored by the WHO Regional Office for the Eastern Mediterranean Region, covered aspects of environmental health in emergencies, including refugee situations, and made it possible to identify most of the documentation available on environmental health management in refugee camps [4]. If not too much is available specifically on environmental health in refugee situations, there is an abundance of information on issues related to environmental health in general that can be of interest to those responsible for the planning and implementation of environmental health interventions in refugee areas.

Annex 2 provides a list of bibliographical references while Annex 3 given a list of sources of information on environmental health in refugee areas.

4. References

[1] Centre for Environmental Health Activities - CEHA. *CEHANET - Regional Information Network for Environmental Health.* Amman, CEHA/WHO, 1989.

[2] Okoye, P. *Guidelines for Environmental Health Services for Afghan Refugees in Pakistan.* Islamabad, UNHCR, 1989.

[3] Sperandio, O.A. *Progress Report No. 2 - Visit to Eastern Mediterranean Countries.* Geneva, WHO, 1988. (Unpublished).

[4] Sperandio, O.A. *Environmental Health Management in Natural Disasters and Other Types of Emergencies - A Selected and Annotated Bibliography.* Geneva, WHO, 1989. (Unpublished).

Annex 1
Sources of information on environmental-health-related matters (with indication of main areas of interest)

CEFIGRE

International Training Centre for Water Resources Management
P.O. Box 13
06561 Valbonne Cedex
France
(Water supply and sanitation)

CEHA

Centre for Environmental Health Activities
World Health Organization
P.O. Box 926967
Amman, Jordan.
(All aspects of environmental health, with emphasis on water supply and sanitation - CEHANET information system)

CEPIS

Pan American Centre for Sanitary Engineering and Environmental Sciences
Casilla 4337
Lima 100, Peru
(All aspects of environmental health - REPIDISCA information system)

ECO

Pan American Centre for Human Ecology and Health
Apartado Postal 105.34
Mexico 5, Mexico
(Human ecology, health aspects of environmental pollution)

ENSIC

Environmental Sanitation Information Centre
Asian Institute of Technology
P.O. Box 2654
Bangkok, Thailand
(Emphasis on water supply and sanitation, environmental engineering - SENSIC database)

ITDG

Intermediate Technology Development Group
9 King Street
London WC 2E 8HN
England
(Low-cost appropriate technology, emphasis on water supply and sanitation)

IRC

International Reference Centre for Community Water Supply and Sanitation
P.O. Box 93190
2509 AD The Hague
The Netherlands
(Water supply and sanitation)

Ross Institute of Tropical Medicine
London School of Hygiene and Tropical Medicine
Keppel Street
London WC 1E 7HT
England.
(Environmental health aspects, water supply and sanitation vector control)

UNEP

United Nations Environment Programme,
P.O. Box 30552,
Nairobi, Kenya.
(Environmental pollution, overall aspects of environmental protection)

UNESCO

United Nations Educational, Scientific and Cultural Organization
7, Place de Fontenoy
75007 Paris, France
(Environmental education)

WASH

Water and Sanitation for Health Project Coordination and Information Centre
1611 N, Kent Street, Room 1002
Arlington, Virginia 22209
USA
(Water supply and sanitation)

WHO

World Health Organization
Division of Environmental Health
1211 Geneva 27, Switzerland
(All aspects of environmental health)

The World Bank
Infrastructure Department
1818 H Street
Washington, D.C. 20443
USA
(Water supply and sanitation, waste disposal)

Annex 2
Bibliography

This bibliography includes documents/publications dealing directly with environmental health in situations originated by refugee and displaced person movements and settlements, as well as references to sources of information on general environmental-health-related subjects which can be of interest to those having responsibilities for public health/environmental health interventions in refugee areas. References include the following elements:

Title and sub-title (if any)
Author/editor (individual or collective)
Place of publication
Publisher
Date of publication
No. of pages
Series title, series number where applicable

- *A Model for the Development of a Self-help Water Supply Programme.* Glennie, C. Washington: World Bank, 1978, p. 47 (Technical Advisory Group Working Paper; number 1).
- *Appropriate Technology for Water Supply and Sanitation: A Field Manual.* Kalbermatten, J.M., Julius, D.S. and Gunnerson G. Washington: The World Bank, 1980, p. 87.
- *Assisting in Emergencies: A Resource Handbook for UNICEF Field Staff.* Ockwell, R. Washington: United Nations Children's Fund (UNICEF), 1986, p. 526.
- *Community Water Supply: The Hand Pump Option.* Arlosoroff, S., Tschannerl, G. and Grey D. Washington: World Bank, 1987, p. 202.
- *Emergency Vector Control after Natural Disasters.* Pan American Health Organization. Washington: Pan American Health Organization, 1981, p. 98.
- *Environmental Engineering and Sanitation.* Salvato Jr., J.A. New York: John Wiley and Sons, 1972, p. 919.
- *Environmental Health Engineering in the Tropics: An Introductory Text.* Cairncross, S. and Feachem, R.G. Chichester: John Wiley and Sons, 1983, p. 203.
- *Environmental Health Services in the Refugee Camps in Jordan.* Abdullah, M.A. Dundee: University of Dundee, 1984, p. 117 (Unpublished).
- *Environmental Sanitation and Integrated Health Delivery Programmes.* Pineo, C.S., Schnare, D.W. and Miller, G.W. Washington: American Public Health Association, 1981, p. 77.
- *Epidemiological Surveillance after Natural Disasters.* Western, K.A. Washington: Pan American Health Organization, 1982, p. 94.

Note: This bibliography has been alphabetically organized (by title) to fulfil a specific objective; thus references do not follow the International Standard Bibliographic Description.

- *Ferrocement Water Tanks and their Construction.* Watt, S.B. London: Intermediate Technology Publications, 1984, p. 118.
- *Framework and Guidelines for CARE Water Supply and Sanitation Projects.* Isely, R. (et al). Washington: WASH - Water and Sanitation for Health Projects, 1986 (WASH Technical Report; number 40).
- *Guidelines for Disaster Prevention: Management of Settlements.* United Nations Office of the Disaster Relief Coordinator (UNDRO). Geneva: United Nations, 1976, p. 84.
- *Guidelines for Drinking Water Quality: Recommendations.* Volume 1. World Health Organization. Geneva: World Health Organization, 1984, p. 130.
- *Guidelines for Drinking Water Quality: Health Criteria and other Supporting Information.* Volume 2. World Health Organization. Geneva: World Health Organization, 1984, p. 335.
- *Guidelines for Drinking Water Quality: Drinking Water Quality Control in Small Communities.* Volume 3. World Health Organization, 1984, 121 p.
- *Guidelines for Planning Community Participation Activities in Water Supply and Sanitation Projects.* Whyte, A. Geneva: World Health Organization, 1986, p. 53.
- *Guidelines for Rural Centre Planning.* United Nations, Economic and Social Commission for Asia and the Pacific. New York: United Nations, 1976, 367 p.
- *Guide to Sanitation in Natural Disasters.* Assar, M. Geneva: World Health Organization, 1971, 135 p.
- *Guide to Simple Sanitary Measures for the Control of Enteric Diseases.* Rajagopalan, S. and Shiffman, M.A. Geneva: World Health Organization, 1974, 103 p.
- *Hand Pumps.* McJunkin, F.E. Rijswijk: International Reference Centre for Community Water Supply (IRC), 1980, 167 p. (IRC Technical paper series; number 10).
- *Housing: The Implications for Health.* Report of a WHO Consultation. Geneva: World Health Organization, 1987, 70 p. (Document WHO/EHE/RUD/87.2).
- *Improving Environmental Health Conditions in Low-Income Settlements: A Community-based Approach to Identifying Needs and Priorities.* World Health Organization, Geneva: World Health Organization, 1987, 61 p. (WHO offset publication; number 100).
- *Management of Solid Wastes in Developing Countries.* Flintoff, F. 2nd ed. New Delhi: World Health Organization, 1984, 231 p.
- *Maximizing Benefits to Health: An Appraisal Methodology for Water Supply and Sanitation Projects.* World Health Organization. Geneva: World Health Organization, 1983, 45 p. [ETS/83.7].
- *Oxfam's Sanitation Unit: The Design and Testing of a Sanitation and Sewage Treatment Unit for Disasters and Long-Term Use.* Howard, J., Lloyd, B. and Webber, D. 2nd ed. Oxford: Oxfam, 1975, 8 p.
- *Public Standpost Water Supplies:* International Reference Centre for Community Water Supply (IRC), The Hague, International Reference Centre for Community Water Supply, 1974, 104 p.
- *Refugee Community Health Care.* Simmonds, S., Vaughan, P. and Gunn, S.W. New York: Oxford University Press, 1985.
- *Safe Water and Waste Disposal for Rural Health: A Programme Guide.* U.S. Agency for International Development (USAID), Washington: US Agency for International Development, 1982, 231 p.

- *Sanitation and Disease: Health Aspects of Excreta and Wastewater Management.* Feachem, R.G. *et al.* Chichester: John Wiley and Sons. 1983, 501 p. (World Bank Studies in Water Supply and Sanitation; number 3).
- *Sanitation Aspects of Mass Evacuation.* US Public Health Service. Washington: US Department of Health, Education and Welfare, 1955.
- *Sanitation without Water.* Winblad, V. and Kilama, W. London: McMillan, 1985.
- *Self-help Wells.* Koegel, R.G. Rome: Food and Agriculture Organization. FAO, 1977, 78 p. (FAO Irrigation and Drainage; paper number 30).
- *Simplified Procedures for Water Examination: Laboratory Manual.* American Water Works Association. Denver: American Water Works Association, 1976.
- *Small Community Water Supplies: Technology of Small Water Supply Systems in Developing Countries.* The Hague: International Reference Centre for Community Water Supply, 442 p. (Technical Paper Series; number 18).
- *Small Water Manual.* Gibson, U. and Singer, R.D. Washington: Agency for International Development, 1969, 156 p.
- *Small Water Supplies.* Cairncross, S. and Feachem, R. London: The Ross Institute, 1978, 78p. (Bulletin number 10).
- *Solar Disinfection of Drinking Water and Oral Rehydration Solutions: Guidelines for Household Application in Developing Countries.* Acra, A., Raffoul, A. and Karahagopian, Y. Beirut: UNICEF/Illustrated Publication S.A.I., 1984, 56 p.
- *Surface Water Filtration for Rural Areas: Guidelines for Design, Construction, Operation and Maintenance.* Thann, N.C. and Hettiaratchi J.P. Bangkok: Environmental Sanitation Information Centre, 1982, 81 p.
- *Surface Water Treatment for Communities in Developing Countries.* Schultz, C.R. and Okun, D.A. New York: John Wiley and Sons, 1984, 229 p.
- *The CAP Guide for Insect and Rodent Control Through Environmental Health Management.* World Health Organization, Geneva: World Health Organization, 1987, 464 p.
- *The Community Health Worker: Working Guide, Guidelines for Training, Guidelines for Adaptation.* World Health Organization. Geneva: World Health Organization, 1987, 464 p.
- *The Design of Pour-Flush Latrines.* Mara, D.D. Washington: The World Bank, 1984, 73 p. (TAG Technical Note; number 15).
- *The Design of Ventilated Improved Pit Latrines.* Mara, D.D. Washington: The World Bank, 1984, 73 p. (TAG Technical Note; number 15).
- *Traditional Water Purification in Tropical Developing Countries: Existing Methods and Potential Application.* Al Agharia, J. and Eschborn, S. FRG: German Agency for Technical Cooperation - GTZ, 276 p.
- *Ventilated Improved Pit Latrines: Guidelines for the Selection of Design Options.* Mara, D.D. Washington: World Bank, 1986, 18 p. (TAG Discussion Paper; number 4).
- *Wastewater Treatment and Excreta Disposal in Developing Countries.* Bauman, W. and Karp, H.J. Dormund: German Agency for Technical Cooperation - GTZ, 1980, 167 p.
- *Water and Human Health.* McJunkin, F.E. Washington: US Agency for International Development, 1983, 134 p.

- *Water for the World: Technical Notes.* US Agency for International Development. Washington: US Agency for International Development, 1982 (About 160 Technical Notes).
- *Water Pumping Devices: A Handbook for Users and Choosers.* Fraenkel, P. London: Intermediate Technology Pubications, 1986, 170 p. (FAO Irrigation and Drainage Paper Series).
- *Water, Waste and Health in Hot Climates.* Feachem, R., McGarry, M. and Mara, D. Chichester: John Wiley and Sons, 1980, 399 p.

Annex 3
Sources of information on environmental health management in emergencies refugee relief agencies

UNHCR

United Nations High Commissioner for Refugees
Centre for Documentation on Refugees
Case postale 2500, CH-1211 Geneva 2 Dépôt
Switzerland
(Headquarters in Geneva, Switzerland; Field offices in a large number of countries.)

UNRWA

United Nations Relief and Works Agency for Palestine Refugees in the Near East
(Headquarters in Vienna, Austria; Field offices in Jordan, Lebanon, Syrian Arab Republic and Occupied Territories)

LRCRCS

League of Red Cross and Red Crescent Societies
Chemin Crêts 17
Petit Saconnex
Geneva, Switzerland
(Headquarters in Geneva, Switzerland; Societies in a large number of countries)

Environmental health management in refugee villages: Sanitation programme for Afghan refugees, Baluchistan

A.T. Ihsan

1. Introduction

The objectives of this paper are as follows:

(1) To give a brief history of the sanitation programme for Afghan refugees in Baluchistan.
(2) To outline the impact of the sanitation programme on public health.
(3) To give a brief account of some specific problems which this project has faced.

2. History

Before the start of the sanitation project in the Afghan Refugee Villages (RVs) in Baluchistan, the sanitary condition was poor. The refugees were accustomed to using open fields and traditional unsafe latrines for defaecation, sewerage and wastewater drainage was negligible and access to clean drinking water was difficult.

The first pilot sanitation project was started in Pishin District in 1983, a joint effort by UNHCR and Action Internationale Contre la Faim (AICF). This project focused on simple pit latrine construction in one area. In 1986 a standardized sanitation programme, involving voluntary agencies and the Project Directorate of Health, was launched in all five districts of the Province.

The total estimated Afghan refugee population in Baluchistan was 454 512, according to the census conducted by UNHCR, 1990/91. The sanitation project aimed at providing service to about 80% of this population. Areas which were not accessible, mainly due to reasons of security, were excluded.

The objectives of this project were as follows:

(1) To achieve adequate coverage of the RVs with sanitary facilities.
(2) To provide ventilated improve pit (VIP) and compost latrines for each housing compound for safe faecal disposal and to reduce the incidence of gastro-intestinal diseases.
(3) To protect refugee water supply. In this regard, improvement of shallow wells was an integral part of the project.

(4) To construct proper sewerage and wastewater drainage systems (soak-away pits) especially in some refugee bazaars.
(5) To build incinerators in the health centres for garbage disposal.
(6) To provide sanitary facilities in schools as a support for school health education.

At the start of the project, managerial staff in North-West Frontier Province (NWFP) and Baluchistan were provided with training in programme organization and management by voluntary agencies such as Austrian Relief Services and Catholic Relief Services.

Ninety percent of staff responsible for sanitation activities and 100% of labour was provided by the Afghans themselves.

Since 1989, due to UNHCR funding difficulties and expected repatriation, sanitation construction programmes were significantly curtailed. Low-coverage areas were targeted, as were specific sites and individuals e.g., schools, Basic Health Units (BHUs), community leaders, teachers and community health workers. (CHWs).

Initially, voluntary agencies undertook all aspects of sanitation-related construction and health education. In 1987 the main task of these agencies was to ensure quality and quantity control of the materials produced. Responsibility for other activities, such as motivation, health education, distribution and construction of materials was transferred to PDH staff.

A special teaching aid, "Sanitation Model," was developed to facilitated staff training and refugee health education.

Priority messages regarding environmental health were widely disseminated through the school health education programme, outreach health workers and CHWs.

3. Coverage

(a) Table 1 shows the number of sanitary facilities provided in various districts.
(b) Table 2 shows VIP and compost latrine coverage in different districts.

Table 1. **Sanitary facilities provided, Baluchistan**

AGENCY	DISTRICT	VIP*	C.L.*	W.I.*	S.A.P*	S.F.*	I*
CRS[1]	Loralai Zhob	14 000	725	--	--	--	--
ACIF[2]	Pishin Gulistan	15 664	800	1 200	15	4 246	12
MSF-F[3]	Chaghai	11 000	--	1 100	--	50	10
PDH[4]	Mohdkhail Chaghai	4 000	--	--	--	--	--
All agencies	Baluchistan	44 664	1 525	2 300	15	4 296	22

1 Catholic Relief Services
2 Action Internationale Contre la Faim
3 Médecins sans Frontières, France
4 Project Directorate of Health

VIP = Ventilated Improve Pit Latrine
CL = Compost Latrine
WI = Well Improvement
SAP = Soak-away Pit
SF = Sand Filters
I = Incinerators

Table 2. **Types of latrines provided, by district**

AGENCY	DISTRICT	FAMILIES* (OFFICIAL FIGURES)	COVERAGE** %	ESTIMATED FAMILIES***	COVERAGE %
CRS	Loralai Zhob	24 016	61.3	16 811	87.0
AICF	Pishin Gulistan	46 586	35.2	32 610	50.4
MSF-F	Chaghai	25 734	43.0	18 014	61.0
PDH	Mohdkhail	18 846	10.0	13 192	14.0
All Agencies	Baluchistan	115 182	37.3	80 627	53.2

* Figures obtained from Commissioner, Afghan Refugees, Statistics 1990.
** Coverage is calculated as the number of families using latrines, divided by the number of total families, multiplied by 100, assuming that one latrine is used by one family.
*** Estimated number of families: figures obtained from UNHCR census 1990/91.

4. Impact

A few surveys have been conducted in Baluchistan to assess the impact of the sanitation programme on the overall public health situation. Surveys conducted by the UNHCR/MSF (Holland) team in 1989/90 are fairly representative of the provincial situation. In the Loralai district a survey of latrine utilization, knowledge of relevant health education of adults and overall coverage of the Afghan refugee population with latrines, helped in the development of new strategies for the sanitation programme and in determining some refugee sanitation needs upon eventual repatriation.

The following important findings and conclusions emerged:

(1) Coverage with acceptable sanitation facilities is quite high, i.e., 70%.
(2) The main reason for families not having a latrine were (a) lack of money and materials and (b) a prohibitively high water table.
(3) About 40% of household latrines are complete; 38% of incomplete latrines need only a door/curtain. (If greater emphasis is laid on ensuring completion and education on how a latrine works, the coverage rate for complete latrines could significantly rise, to approximately 80%.)

The CHW survey revealed the following:

(1) Women utilize latrines far more than men and children (doubtless for sociocultural reasons).
(2) Latrines are rarely used exclusively; night-time defaecation practices are unsatisfactory.
(3) Only one third of the sample knew that health and disease prevention are the most important benefits of having a latrine. Observance of purdah is perceived as the main benefit.

In Pishin and Gulistan the percentage of women and children utilizing latrines is slightly higher than in Loralai district, probably because of higher numbers of recently settled nomads in the latter district.

The CHW programme in Baluchistan covers most areas and is fairly well integrated. CHWs have an important role in disseminating health messages among Afghan refugees. Another survey was conducted by the UNHCR/MSF team in 1990, in order to assess the impact of CHWs on health knowledge and the practices of refugees living in Baluchistan RVs. The survey revealed that the knowledge of CHWs about the advantages of having a latrine was good. Refugees in contact with CHWs see the main advantage as reduction of flies and odours (57%). Forty-three per cent of these contacts stated that the main advantage is prevention of disease while 33% cited purdah and privacy. It was noted that disease prevention is better appreciated by refugees in contact with CHWs than by non-contacts.

5. Achievements

(1) Coverage with VIP latrines has been good since 1988 in all districts, except in far-flung areas such as Chaman, Mohd Khail and Norek.
(2) Forty-five per cent of the areas with a high water table have been provided with compost latrines.
(3) Monthly reports from outreach workers confirm that 52% of latrines are being utilized and kept clean.
(4) Sixteen per cent of communal wells in Pishin, Gulistan and Chaghai have been improved.
(5) 43 000 sand filters have been distributed at subsidized rates to some families (17%); 68% of BHUs have been provided with sand filters.
(6) Forty-eight percent BHUs have been provided with incinerators. Their utilization and maintenance are satisfactory.
(7) In order to reduce mosquito and fly breeding sites, practical demonstration of dumping rubbish in natural pits is being carried out by outreach workers and CHWs.
(8) Community participation, mainly in construction and utilization of sanitation-related facilities, helped to transfer sanitation technology to Afghan refugees, as indicated in the sanitation survey.
(9) Twenty-seven per cent of schools and deeni maderessas (religious schools) have completed the health education programme, including training of 12% of teachers.
(10) A long-term impact of the sanitation programme is inferred from BHU data indicating reduced morbidity from diarrhoeal disease and fewer outbreaks, assuming that many cases of diarrhoeal disease are due to poor sanitation.
(11) New strategies have been developed in view of limited resources and expected repatriation.

6. Specific problems

Some specific problems were noted during the implementation of the sanitation programme in Baluchistan. These are outlined hereunder.

(1) VIP latrine superstructure could not be completed in many areas due to lack of water.
(2) The PVC pipes used for the VIP latrines proved unsuitable; they became brittle and broke off.
(3) Tin pipes intended for latrines have been used as chimney pipes.
(4) Due to the long distances in Baluchistan, transportation of slabs has been a problem.
(5) Pollution of some improved wells and sand filters continues. The reason is poor utilization and maintenance by refugees.
(6) Because of the high unit cost of shallow well improvement, coverage remains low in many areas.
(7) Some 5% of the improved wells are dry and useless for half the year (summer), because the water table drops.

(8) Wells abandoned by repatriating refugees are potential breeding sites for mosquitoes, as reported by the entomologist in September 1990. This is one of the reasons why Chaghai district is experiencing increased malaria.
(9) Although 38% of refugees in contact with CHWs have a good knowledge of safe solid waste disposal, actual practice has not been observed.
(10) Because of the high unit cost (Rs. 7000/hand-pump) the hand-pump project was not implemented.
(11) The dilemma remains: How to transfer sanitation technology to refugees without incurring great expense?

7. Sanitation needs upon repatriation

The sanitation survey conducted in Loralai and Pishin Districts revealed that:

(1) There appeared to be a direct relationship between benefit, knowledge and future application. The majority of refugees intended to build a VIP latrine after their return to Islamic State of Afghanistan; half of these would wait for an agency to provide them with materials.
(2) Fifty percent stated that they would make wooden or concrete slabs themselves but about 46% would wait for a donor to provide them with a slab, while 4% said they would transport the materials from Pakistan RVs.
(3) Fifty-two per cent would await receiving a pipe from a donor, 41% would buy one from a bazaar and 7% would transport one from Pakistan.

8. Recommendations for the future

It is recommended that:

(1) Priority be given to completing unfinished construction, e.g., of VIP latrines. New construction should be limited to areas with significant public health problems. In areas with very low coverage, specific locations/people should be targeted. In other areas the focus should be on education and motivation to properly use and maintain existing facilities.
(2) A communication plan utilizing effective communication channels and deploying health messages is required to propagate sanitation education. The CHW and school education programmes are two obvious components.
(3) Health committees should be strengthened: maximum community participation is required to organize and manage the sanitation project. Agencies should focus only on providing technical assistance. Communities should be encouraged to self-finance the sanitation project.

Environmental sanitation services and development in Palestinian refugee camps: The UNRWA experience

N. Shalbak

1. Introduction

The foundations of UNRWA's health services were laid in 1948-1949. In the initial stages, the health problems arising from destitution required emergency action. Water supplies were inadequate and unprotected. Sanitary facilities were either non-existent or grossly inadequate.

Voluntary agencies, followed by UNICEF and WHO, were called upon to address the immediate health problems. As soon as the UNRPR was established, WHO was requested to provide the services of a senior public health expert: on 1 May 1950, when UNRWA assumed responsibility for the Health Programme, WHO agreed to continue to assign personnel for the technical direction of the programme; these included a chief medical officer, an epidemiologist, a sanitary engineer and a chief nurse.

Essentially, the health programme includes medical services (curative and preventive), milk and supplementary feeding and environmental sanitation. The total health budget increased from US$2 million in 1950 (5% of the total) through about US45.5 million in 1962 (US$3 million on medical services, US$1.6 million on milk and supplementary feeding and US$1 million on sanitation, i.e., about 14% of the total), to about US$46.4 million in 1990.

2. Foundations of the environmental sanitation programme

Environmental sanitation has been one of the essential aspects of the health services provided by UNRWA. The foundations of the programme were laid in the period 1948-1950, when the refugees had to be accommodated on an emergency basis, mostly in tents, and provided with basic sanitation facilities.

When UNRWA was established, a WHO public health engineer was seconded to the Agency as the technical authority responsible to the Director of Health for the environmental sanitation programme. The programme was confined primarily to the refugees living in camps, whose number has increased from about 250 000 in 1950 through 461 000 in 1963 to 813 000 in 1990. The cost per capita per annum of the provision of sanitation services to the camp inhabitants was originally about US$2, rising to about US$8.

3. Camps and shelters

On their flight from Palestine, most of the refugees sought shelter in caves, mosques, tents and makeshift shacks. Tented camps were organized by voluntary agencies and, in 1 May 1950 about 30% of the refugees were living in 57 camps: 25 in Jordan (including the West Bank), 8 in the Gaza Strip, 16 in Lebanon and 8 in Syrian Arab Republic. The camps varied widely in size; the population ranged from a few hundred in the smallest to tens of thousands in the largest.

In the organized tented camps, a plot size of 7 m x 7 m was considered as the minimum required area, either for the ridge-type tent (4.2 m x 4.2 m) or for the French pyramidal type, but a 10 m x 8 m plot was preferred: a gross area of 105 m^2 is required in this case.

A programme for the elimination of tents was carried out, following many patterns, viz: issue of roofing grants of $50 in Syrian Arab Republic, issue of timber and other roofing materials in Lebanon and Jordan and construction by UNRWA of shelters. Refugee construction had been mainly with reinforced concrete and cement blocks (in Jordan) or cement tiles or asbestos sheets. In general, however, the already limited planning of layout and accommodation in camps has been further reduced, especially in the suburban camps, for lack of control of additional construction. Therefore, many camps are now overcrowded.

4. Water supply

One of the most important aspects of the programme is that for provision of safe and potable water. The per capita allowance of water had been 20 litres per day on average (10 litres minimum), depending on availability. Water was distributed through public water points so located that the greatest distance of any dwelling from any point was not more than 150 metres, and there was one tap or outlet for about 200-250 refugees.

Although the distribution of water in all camps had been conducted invariably by the Agency, the source of water and nature of payment for water supplied by the host government had varied widely.

In Lebanon, in 14 camps out of 16, water was received from water companies or private sources. Sometimes the Agency had to utilize water tankers. In the remaining two camps, one used a flowing spring while in the other a turbine pump was installed on a deep well.

Similarly, in Syrian Arab Republic in two camps out of six, the Agency had to establish and operate independent sources of water. In Jordan, camps in the vicinity of municipalities drew water supplies from them. The Agency also had to operate water tankers and to establish and operate independent sources of supply. In Gaza, the Agency established and operated the entire water supply system.

Treatment of water and testing of water quality received careful attention from the early days. Disinfection of water by chlorination was the rule. Apart from chlorination, the only instance of any additional treatment was that of slow sand filtration at one camp in the West Bank.

5. Waste disposal

5.1 Excreta disposal

In the early days, public latrines of the pit type, in units of 6, 8, or 10 curtained cubicles, were used. The superstructure was of corrugated iron sheets on a wooden frame; the pit extended to the full area of the squatting slab and was about 4 m deep. When the pit became full the superstructure was moved to a new site and the old pit sealed. This type of latrine entailed constant maintenance, besides contributing to fly-breeding. The bore-hole type helped to eliminate fly-breeding. Early in 1953, a plan was drawn up to build the septic tank or aqua-privy type. In this type, a drop pipe extends from the squatting slab into a septic tank; there is a depth of water-seal to prevent odours. The effluent is led into either a seepage pit or a tiled drainage field.

The norm for the provision of public latrine seats was 3 per 100 camp population, the greatest distance of any shelter from a latrine being about 30 m. The septic tank capacity was assumed to be 50 litres per person and the minimum water depth was 120 cm.

Since 1958, with the replacement of tents in camps by huts, a significant shift has occurred toward the promotion of construction of family latrines by the refugees themselves, with subsidy of materials or cash contribution by the Agency. In Gaza, a central workshop for the manufacture of all components was established. This programme was most successful.

The problem of wastewater disposal was an increasing one, especially in the suburban camps in Jordan, Lebanon and Syrian Arab Republic, for several reasons; however, the introduction of sewerage systems in some areas enabled linkage of nearby camps.

5.2 Refuse collection and disposal

The importance of sanitary collection and disposal of refuse was recognized in the early days of the Agency.

Partly dependent on the system of disposal, the system of collection of refuse in camps had varied; generally, conveniently located garbage bins for public use had been established in Gaza only. Cement concrete bins of about 0.05 m^3 capacity had been build at the rate of 3 per 10 camp inhabitants so that the greatest distance from any shelter was about 10 metres. In other areas, either concrete platforms or collection depots were used, or sanitation labourers at the rate of 2.5 per 1000 population went round once a day with wheelbarrows to every shelter and thus collected the refuse. The volume of refuse collected daily varied from 0.5 to 0.7 m^3 per 1000 population.

The principal methods of disposal were haulage, composting, incineration or burial in pits. In the case of suburban camps, haulage was done by the municipalities or contractors.

Of the various methods of refuse disposal, composting in Gaza was the most satisfactory. Compost bins of approximately 4 m x 1.5 m deep were dug in the sandy subsoil. Every pit was filled in a period of one to three days and was covered with claysoil for about 40 cm depth, with a clay puddle for another 2.5 cm. After a minimum period of four months, the pit was opened and the compost removed by contractors.

Incineration of refuse was adopted widely, especially in camps in Jordan and Lebanon. Refuse was usually screened for noncombustible materials; wet garbage was spread in thin layers to dry and then incinerated.

In the early days of the Agency, burial of refuse was quite common, with application of insecticides to the top layers. However, this practice was very soon abandoned; in general, this method is not applied except when local conditions demand emergency disposal.

The employment of sanitation labourers for waste collection and disposal in every camp was originally based on a ratio of 2.5 labourers per 1000 camp population.

6. Vector control

The vector control activities of the Agency were directed, mainly, against mosquitoes, flies, lice, fleas, bedbugs and rodents. Endemicity of malaria in the area and lack of adequate sanitary measures during the early stages of the Agency demanded emergency action. A WHO malariologist was in charge of the overall direction of the programme and the sanitation staff performed the field operations until 1959, when this function came under the Environmental Sanitation Programme.

6.1 Mosquito control

A mass residual spraying of refugee habitations with DDT was carried out as an emergency measure following a malaria epidemic in autumn 1948. Following the establishment of UNRWA, an anti-malaria campaign, with residual spraying and surveys, was conducted in 1950. The campaign generated the interest and cooperation of the local governments and the Agency was able to promote mosquito control activities by assisting the Government in carrying out surveys.

6.2 Fly control

Fly control was of great importance, due to lack of community sanitation and of hygienic housing. Emergency measures against mosquitoes helped to reduce the adult fly density. Strict supplemental measures on control of breeding places had to be taken. The fly control programme included weekly assessment of fly density by an index derived from observations of the number of flies resting on observation units of 1 m^3 during a period of 30 seconds.

At first DDT was used; followed by chlordanee, Dieldrin and BHC. The development of community sanitation and improved shelters caused a continuous decline in insecticidal operations. Improvement of basic sanitation is the essential measure relied upon to minimize the fly problem.

6.3 Louse control

Mass delousing campaigns by dusting with 10% DDT were at first conducted on refugees, their clothing and bedding yearly, early in the winter (November - December). However, since 1958 only selective delousing has been conducted.

In this connection, the Agency provided public bath-houses, where hot water and soap (60 g of solar oil and 25 g of soap required per bath) were supplied, and this has helped to reduce lice infestation.

6.4 Flea control

The flea problem had to be dealt with largely by dusting of the ground and bedding with 10% DDT. On the whole, the flea problem has progressively diminished, mainly due to large-scale improvements in shelter, viz. provision of concrete flooring and plastering of walls.

6.5 Bedbug control

The mass residual spraying campaigns associated with other insect vectors were indirectly helpful in controlling bedbug infestation. Improvements in community housing, sanitation and personal hygiene led to the gradual phasing out of the problem. However, selective insecticiding may still be needed and carried out in infested shelters.

7. Development of environmental health services in refugee camps

As outlined above, the environmental health programme in the Palestinian refugee camps started with the provision of basic needs, e.g. water for drinking and cooking, excreta and kitchen waste collection and disposal and limited insect control. Environmental health services developed in the camps with the passage of time, in spite of limited financial resources. At present these services are comparable with the services provided by the host governments to similar communities.

The environmental health services in the camps cover the following activities:

1. Water supply
2. Waste disposal
3. Surface water drainage
4. Insect and rodent control
5. Ancillary facilities

7.1 Water supply

When the camps were first established, water tankers were used to distribute water to the refugees in various areas for drinking, cooking and washing, at the rate of 5-10 litres of water per person per day.

Eventually this method was replaced by the installation of small water reservoirs in various sectors of the camps, filled by water tankers, for the refugees to collect their water needs.

Some nearby water sources, e.g. wells and springs, were maintained and protected to supply camp residents with water for basic needs.

As these sources are neither adequate nor reliable to supply the refugees with their increasing demands for water, it became necessary to construct water distribution networks.

7.1.1 Water storage

All camps were provided with steel and/or concrete water reservoirs located at the highest point in the camps for gravity water distribution throughout the distribution systems. The capacity of the water reservoirs correlated roughly with the daily water consumption when the camps were established, taking into consideration the availability of water and the topography of the camps.

7.1.2 Water distribution

Water from the reservoirs was distributed through a pipe network to the various public water distribution points (public fountains or standpipes) which are available in all sectors of the camps, and also at the central installations.

Public water distribution standpipes equipped with taps are located in such a way that the distance between any shelter and a water point does not exceed 300 m. Each tap serves 200-250 inhabitants.

Taking into account the availability of water and seasonal demands, the average daily per capita allowance of water for all purposes throughout the UNRWA network ranges between 10-20 litres.

Due to the relative improvement in the living conditions in the camps, the inhabitants now need far more than is provided by public water distribution points. Additional water was supplied by private water tankers; these tankers were filled with water from approved sources and sold to the camp inhabitants.

In camps located near municipalities, many families managed to connect their shelters to the municipal water systems against the payment of fees and the cost of water consumed. The increase in the number of private water connections from municipal sources in some camps rendered water distribution points in these camps redundant; they were therefore eliminated.

Water safety was checked regularly through weekly or fortnightly collection of water samples from various points in the water networks in the camps as well as at the central installations. Chemical analysis was carried out by the governmental authorities concerned.

Water supply attendants control water supply and distribution in the camps, and plumbers provided with necessary tools carry out repairs to the water networks.

7.2 Waste disposal

Waste in the camps includes the following:

- human excreta
- sewage and wastewater
- solid wastes.

7.2.1 Human excreta

Safe excreta disposal is an essential element in ensuring a harmless environment in the camps.

The UNRWA latrine construction programme started with the provision of temporary latrines, e.g., trench latrines, and pit privy latrines for communal use. These were replaced by

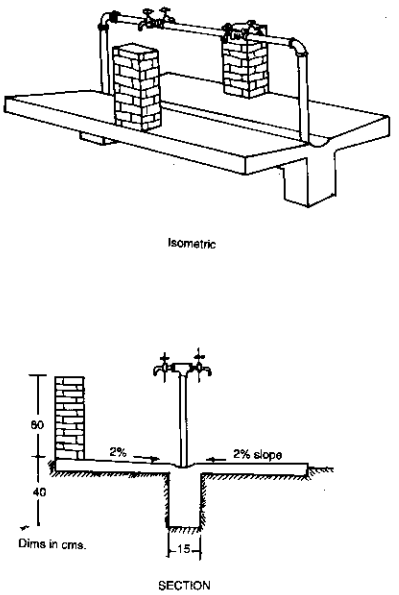


Figure 1. Public water (one model used in camps)

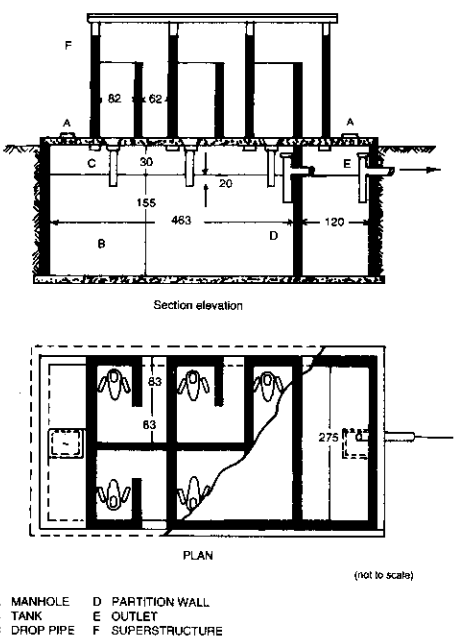


Figure 2. Public aqua privy

more hygienic public septic tank latrines, with percolation pits for the disposal of the tanks' effluent, at the rate of 3 slabs per 100 persons.

As the use and upkeep of communal latrines proved to be difficult and impractical, the family latrines programme was launched. UNRWA contributed the necessary materials for the construction of family latrines, e.g. iron bars, cement, slabs and trap. All or most families have constructed their own family latrines, with or without assistance from UNRWA, and most public latrines have been eliminated.

7.2.2 Sewage and wastewater

Wastewater from the tents and temporary shelters was at first disposed of in the streets and alleys, ending up in the wadis in or near the camps. After the construction of the family latrines, wastewater was disposed of in the percolation pits of these latrines.

Full percolation pits are voided by vacuum tankers and disposed of at sites appointed by the municipal or governmental authorities concerned.

UNRWA policy is to link to sewerage systems those camps that fall within or near municipalities served with such systems. In fact, many camps are served with sewerage systems.

7.2.3 Solid waste

Solid waste generated in the camps, as anywhere else, includes many different materials, the amount and characteristics of which differ according to seasonal variations, geographical location and the inhabitants' lifestyle.

In general, solid waste from the camps includes paper, vegetable and fruit remains, leaves, grass, wood, clothes, synthetics, glass, metal, ashes, sweepings, dead animals, animal manure, bones and food scraps.

A large quantity of the camps' solid waste is composed of putrescible matter which attracts insects, provides food for rodents and generates and releases offensive odours.

(i) Collection of solid waste

UNRWA appointed sanitation labourers at the ratio of 2.5 labourer per 1000 camp residents to sweep the streets and open spaces daily, collect solid waste from the shelters, installations, markets and other places and transport it in wheelbarrows for disposal in depressions, trenches and pits in and around the camps. At the end of the day these wastes were covered with earth. When such places were no longer available, solid wastes were transported by sanitation labourers to small incinerators in the camps or by mule cart a few kilometres distance from the camps where they were dumped in the open. Some farmers used the solid wastes as fertilizer. Low-temperature burning was often used, but on many occasions this was not possible as solid wastes are wet in winter and in summer there is fear of the spread of fire. Disposal sites thus became fertile places for fly breeding and a nuisance, both to the camps and to neighbouring residential areas.

The sanitation labourers use solar oil and kerosene for burning refuse dumped near the camps. After burning, metal tins are raked, flattened and buried to clear the site and to prevent mosquito breeding.

Due to non-availability of disposal sites within or near the camps, vehicles are used to transport solid wastes from collection (transfer) points located in the camps to municipal dumps.

Solid wastes at the collection points are uncovered; they attract insects and rodents, release offensive odours and constitute an eyesore. Collection points are resented by camp residents, especially those living nearby.

In some camps solid wastes are collected in containers of 1-12 m^3 capacity.

Due to overcrowdedness and lack of open spaces, the number of refuse collection points decreased; sanitation labourers transport solid wastes for long distances and some of them overload their wheelbarrows/hand carts to decrease the number of trips.

With the improvement of conditions in the camps the sanitation labourer ratio was gradually decreased to 1.4-1.5:1000 of camp residents, with additional labourers to deal with special elements having an effect on environmental health.

(ii) Storage of solid wastes

Camp residents place solid wastes loose in metal or plastic containers. Full containers are placed outside the shelters and emptied by UNRWA sanitation labourers. Bins of about 15-20 litres capacity are used, adequate for one or two days. If more solid wastes are produced more bins may be used or refugees may deposit the contents at the nearest collection point.

Camp residents are advised to place solid wastes from the kitchens in the paper or plastic bags they get when shopping to facilitate refuse collection and to keep bins clean.

(iii) Solid wastes transportation

Solid wastes at the collection points are loaded manually or mechanically into solid waste vehicles. Elevated platforms are built to facilitate manual loading.

Full solid waste containers are transported and emptied at municipal dump-sites and returned to the camps by special lifter vehicles. Trolley containers of 1 m^3 capacity each are mechanically emptied into refuse compacting trucks.

Solid wastes are transported either by Agency vehicles, contractual or municipal ones and dumped at dump sites, approved by the concerned government and/or municipal authorities, where they are burnt in the open and buried, using bulldozers and other machines. Sites are sprayed with insecticides and rodenticides for insect and rodent control.

7.3 Surface water drainage

7.3.1 Rainwater ditches

The drainage of stormwater has been of concern to UNRWA since the establishment of the camps. Refugee tents and shelters were sited as far as possible from flooding areas and natural water courses.

Drainage of stormwater was necessary to protect refugee tents, shelters and installations, to prevent flooding, damage to building foundations and road erosion, to eliminate water stagnation and the creation of long-lasting pools. Refugees' tents and shelters were threatened by flooding on many occasions in the early years following the establishment of the camps.

Initially, the refugees dug earth ditches around their tents and shelters to divert rainwater. Emergency teams of sanitation labourers and other volunteers, equipped with the necessary tools and protective clothing, toured the camps digging and clearing drains, ditches and culverts and giving necessary help to the refugees.

7.3.2 Concrete surface water drains

In the years following the establishment of the camps, concrete open surface water drains were constructed around central installations, alongside main asphalted roads and in limited areas in the camps. Their function is to drain and divert rain- and wastewater from the water distribution points and the refugee shelters to the nearest natural rainwater course. The slope of the drains is dictated by the topography of the camps.

Concrete surface-water wedged-shaped drains were extended to other areas that were subject to flooding and water stagnation.

7.3.3 Self-help project

The increase in water consumption in the camps resulted in an increase in wastewater and in the saturation of percolation pits of the family latrines, which thus needed frequent voiding.

To avoid paying for the voiding of the percolation pits some of the camp residents emptied the contents of their percolation pits on to the streets and alleys; wastewater ditches were thus created, releasing offensive odours and becoming a threat to the health and even the lives of the inhabitants.

The ideal solution for the disposal of wastewater is the construction of sewerage systems with treatment facilities. This was and still is impossible to implement without an increase in UNRWA financial resources; therefore UNRWA launched a project for the pavement of roads and pathways with concrete and the construction of concrete surface drains for drainage of rainwater and harmless wastewater. Harmful wastewater containing human excrement is to be disposed of in the percolation pit of family latrines.

UNRWA coordinated the project with the concerned municipal and governmental authorities as well as with camp residents and their representatives. UNRWA provides the necessary construction materials, e.g. cement, sand, aggregates and stones for the pavement of roads and pathways, while the residents, in cooperation with governmental authorities, pay for the cost of labour. The project was welcomed by the camp residents and it has now covered or is progressing in all camps.

7.4 Insect and rodent control

The importance of insect and rodent control in camps is due to the conditions existing there, which favour a rapid increase in the number of insects and rodents and consequent exposure of the refugees to the diseases transmitted by them.

The initial steps taken in the early days of the camps were directed toward insect and rodent control by physical and chemical means, followed by sanitary waste storage, collection and disposal, and improved personal hygiene.

The objectives of insect and rodent control are: to eliminate breeding places by maintaining a clean environment, to prevent their access to food and water and to apply insecticides and rodenticides to their breeding and gathering places.

The commonly encountered insects and rodents in the camps that are of medical importance are: flies, lice, fleas, bedbugs, cockroaches, mosquitoes, mice and rats.

7.4.1 House flies

The house fly is found almost everywhere and it lives close to man and his environment. The house fly's life cycle may be completed in one week to two or more months, depending on temperature and environmental conditions.

Apart from being a nuisance, the house fly can be a vector of many diseases, e.g. typhoid, paratyphoid, dysentery, cholera, diarrhoeal disease, parasitic worms, trachoma and food poisoning.

Since the beginning of its operation, UNRWA was concerned to control flies by the most effective methods: the elimination of breeding places by proper sanitation aimed at breaking the life cycle, and by adopting sanitary storage, collection and disposal of organic wastes.

Living conditions in the camps and the primitive methods of refuse storage, collection and removal necessitate the application of insecticides.

A variety of insecticides is used for outdoor fly control, e.g. DDT, Dimethoate, Bygone, Alfacrone, Coopex, Ranax etc. Hand-operated compression sprayers are used in all camps. Labourers who participate in insect control activities are provided with protective clothing.

7.4.2 Lice

The louse is a small, wingless ectoparasite which feeds by sucking mammalian blood.

Apart from the unpleasantness of the infestation and the irritation caused by louse bites when sucking blood, the louse is an important vector of some serious human diseases, the most important being epidemic typhus and relapsing fever.

Conditions in the early camps, i.e. overcrowdedness and the lack of facilities for personal hygiene, favoured lice breeding. Lice infestation was so common that it necessitated control campaigns in the camps. Individuals' clothing and bedding were dusted using 1% gammexane anti-louse powder and 10% DDT at the rate of about 60-100 g per person, clothing and bedding.

Some refugees boiled their clothes and exposed them to the sun's heat, and washed their hair with hot water containing kerosene. Public baths were constructed to provide bathing facilities with hot water and soap, to limit infestation.

At present lice infestation is limited, being encountered only among young schoolchildren.

Health education is carried out, especially at school, with emphasis on personal hygiene, frequent bathing with hot water and soap, washing clothes with detergent and pressing with hot irons, the use of separate combs and hair brushes, shaving or cutting the hair and the use of anti-louse shampoo for infested hair.

7.4.3 Fleas

Fleas are small, wingless, active insects, which feed on the blood of warm-blooded animals. Fleas are the vectors of two serious diseases: plague and typhus. Flea infestation was a major problem in the refugee camps in the early years; overcrowdedness, as well as lack of washing and personal hygiene facilities, were ideal for the spread of fleas among the refugees. Flea control campaigns were organized and executed. Tents and temporary shelters were sprayed with DDT and Malathion. The inhabitants were requested not to sweep or dust off the insecticides. Pets were few in the camps but when encountered they were dusted also. Follow-up selective flea control continued for many years.

Cement was issued to the refugees to pave their tents and shelters to eliminate hiding places and facilitate cleaning.

As a result of the improvement in both living conditions and housekeeping, together with regular sweeping and cleaning, there was no opportunity for eggs and larvae development and flea infestation in the camps has not been reported for many years.

7.4.4 Bedbugs

There is no evidence that bedbugs are vectors of disease. However, the bedbug bite causes discomfort, irritation and pain and in some cases it may cause severe skin inflammation, as well as embarrassment and distress, to the human host.

In spite of the living conditions in the camps, the ill-constructed shelters and the use of second-hand furniture, which favours the breeding and the spread of bedbugs, there has been no serious infestation in the camps. Any cases of bedbug infestation reported are effectively treated with Diazinon at the rate of 40-80 g per room (10-12 m^3), with special attention to cracks, crevices, wooden furniture, frames, etc. Shelters are then kept closed for one or two days. The inhabitants are requested to check luggage and second-hand furniture carefully, and to report immediately the discovery of bedbug infestation.

7.4.5 Cockroaches

Cockroaches are closely associated with man. They are found near foodstuffs, in kitchens under sinks, in cupboards and in sewers. Cockroaches feed on any edible matter. Apart from their potential to transmit disease, cockroaches are of disgusting appearance, have an unpleasant odour and contaminate food.

Limited cockroach infestation in the camps is observed in the shelters, behind the lining of the temporary shelters, in latrines, in manholes, in drains, in kitchens, in the market areas, cupboards, etc. No major control measures were taken against cockroaches because of their minor role in disease transmission and their close proximity to foodstuffs where chemical control may contaminate the food in the camps' primitive kitchens.

However, emphasis is placed on environmental control, e.g. eliminating cracks, crevices and on cleaning and proper housekeeping, waste storage, collection and disposal. Outdoor infestation is occasionally treated with Dimethoate 40%.

7.4.6 Mosquitoes

Mosquitoes are widespread and well known to most people. Female mosquitoes are important vectors of serious diseases, e.g. malaria, yellow fever and filariasis. Malaria was once prevalent in some areas in UNRWA's fields of operation.

The UNRWA role is limited to eliminating potential breeding places within the camps by ensuring that water reservoirs are mosquito-proof, draining surface water, regular maintenance of public latrines and percolation pits, and solid waste removal with proper disposal of empty containers.

7.4.7 Rodents

Rodents are found world-wide. They feed on seeds, grains, plants, insects and animals. They have swimming, running and climbing abilities.

The most important and dangerous rodents from public health points of view are mice and rats which are capable of transmitting several dangerous diseases, e.g. typhus, rabies and tapeworms. Rodents also cause serious economic loss to man.

Mice are encountered in all camps. They are found in dark quite corners, in clothes bundles, in boxes, shops, stores, and in holes in walls, etc. Rats are encountered in camps located in or near large cities.

The use of rodenticides in camps is not safe as there is the possibility of accidental poisoning to man and his domestic animals; therefore, trapping is the only practical method for mice and rat control in camps. The inhabitants are advised on how to keep their shelters rodent-proof as much as possible and to keep food and water away from rodents.

7.5 Ancillary facilities

Bearing in mind the temporary nature of the camps and the conditions existing in them during the early years, ancillary sanitation facilities had to be provided to maintain personal cleanliness and to prevent the spread of diseases. There was a need for bath houses, animal slaughter houses and stores in all camps.

7.5.1 Bath houses

Living conditions in the tents and other primitive accommodation made it necessary to construct bath houses to enable the camp inhabitants to have a hot bath at least once a week to maintain their personal hygiene.

In small camps one bath house containing 10 showers was build to be used by each sex on three separate days a week. In large camps two separate bath houses were built, one for each sex. Hot and cold water was available daily; soap was also provided. Towels, combs, brushes and other toilet articles were provided by the refugees themselves.

The improvement in the living conditions in the camps resulted in a decrease in the number of bath-house users and the number dropped to such a level that bath houses were closed and phased out.

7.5.2 Slaughterhouses

Slaughterhouses were constructed to enable butchers to slaughter animals for daily consumption. Adequate water was supplied and percolation pits were provided for the disposal of blood and wastewater.

The animals slaughtered in the camps are largely sheep and goats, some cows and, rarely, camels.

Transportation of the carcasses from the slaughterhouse to the butchers' shops is done by primitive insanitary means. Butchers' shops in the camps are of a low standard and lack many essential sanitary facilities.

7.5.3 Sanitation stores

In each camp there is a sanitation store where equipment, tools and supplies used for various environmental health activities are kept. These are ordered from the UNRWA main stores. All supplies received and consumed in the camps are recorded and returns are submitted.

8. Norms and standards applied in environmental health in refugee camps

8.1 Determination of the number of staff

The sanitation labourer and supervisor ratios have been the subject of discussion and review since the establishment of the camps. The ratios have been amended in line with the changes that have taken place in the camps over the years.

The presently applied ratios are as follows:

8.1.1 Sanitation labourers

The number of sanitation labourers in camps is determined as follows:

(1) 1.5 labourer posts per 1000 persons of registered camp population for camps with difficult terrain. Camps classified under this category are the following:

Jordan	J/Hussein, Jerash and Hittin
West Bank	All camps except Ein Sultan, Nuweimeh Azzeh and Balata
Syrian Arab Republic	Dera'a
Lebanon	Nahr El-Bared and Ein El-Hilweh
Gaza	None

(2) 1.4 labourer posts per 1000 persons of registered camp population for the other camps. In addition to the above, sanitation labourer posts are authorized for special factors having a bearing on environmental health services in the camps, as follows:

One sanitation labourer for each 40 public latrine seats.
One sanitation labourer for each 50 stables and poultry sheds.
One sanitation labourer for each 5000 squatters adjacent to the refugee camps.
One sanitation labourer for each 500 vacant shelters (applicable in some refugee camps in West Bank).

8.1.2 Sanitation foreman

The number of sanitation foremen is determined as follows:

POST TITLE	NUMBER OF LABOURERS SUPERVISED				
	3-15	16-31	33-35	56-57	76-100
Sanitation foreman B	1	1	2	3	4
Sanitation foreman A	--	1	1*	-	--
Chief sanitation foreman	--	--	--	1	1
Total posts	1	2	3	4	5

* Post becomes that of Chief Sanitation Foreman when the number of sanitation labourers exceeds 42.

8.2 Cleaning supplies and tools

Cleaning supplies and tools vary from area to area, according to the activities carried out by the labourers. The quantities of these supplies and tools are determined in the light of expenditure and experience in the previous year or years, which are reviewed regularly.

The present norms applied are as follows:

DESCRIPTION	ANNUAL ISSUE PER LABOURER				
	GAZA	LEBANON	SYRIAN ARAB REPUBLIC	JORDAN	WEST BANK
(a) Cleaning supplies					
Brush, external use, stiff handle, wooden	--	--	3.00	6.00	--
Broom, heavy duty, nylon bristles	1.00	2.00	2.00	3.00	2.00
Brush, latrine, stiff bristles, 4 cm	1.00	4.00	3.00	0.50	4.00
Brush, scrubbing, 20 cm	--	--	--	0.10	0.10
Liquid soap	2.00	2.00	--	--	--
Toilet paper	--	1.00	2.00	--	--
(b) Tools					
Handle hoe sugar beet	--	2.00	--	--	--
Handle pick clay 38"	0.07	0.15	0.05	0.07	0.07
Handle rake	0.05	0.15	0.05	0.07	0.07
Handle, shovel 48"	0.22	0.35	0.40	0.30	0.30
Pick clay 2.5 kg	0.43	0.35	0.30	0.15	0.15
Rake 14" wide 14 teeth	0.10	0.30	0.10	0.03	0.14
Shovel, square point	0.45	0.70	0.50	0.50	0.45
Palestine citadel hoe (spade)	0.86	0.70	1.00	0.50	0.30

8.3 Protective clothing

Sanitation labourers are provided with protective clothing to carry out their responsibilities. Although norms for protective clothing have not been used during the last few years, they are used for budget preparation as follows:

One raincoat for each sanitation labourer and foreman every four years.
One pair of rubber boots for each labourer and foreman per year.
One pair of leather boots for each labourer and foreman per year.
Two overalls per labourer per year.
Two pairs of leather gloves per labourer per year.
One hat for each sanitation labourer and foreman per year.
One towel per labourer per year.
One piece of soap per labourer per week.
Two safari suits per foreman per year.

8.4 Budget

A budget for maintenance, stationery, fuels and insecticides is prepared on the basis of past expenditure and experience.

8.5 Water

(a) *In camps*: Water is supplied to camp inhabitants through the Agency water network to public water distribution points available in all sectors of the camps, provided that the distance between the water point and the most distant shelter does not exceed 300m.

Each tap on the water points serves 200-500 persons; the average daily per capita consumption from the Agency water network is between 10-20 litres.

(b) *In schools*: For drinking purposes schools are provided with taps at the rate of one tap for each 50 pupils.

Schools are supplied with water for drinking and cleaning purposes as follows:

(1) Schools with sewerage system

- Three litres per pupil per day for long study day.
- Two litres per pupil per day for short study day (two shifts).

(2) Schools served with sewerage system

- Seven litres per pupil per day for long study day.
- Four litres per pupil per day for short study day (two shifts).

(c) *In feeding centres*

- Four litres per beneficiary per day for the first 500 beneficiaries
- Two litres per beneficiary per day for the second 500 beneficiaries
- One litre per beneficiary per day for additional beneficiaries

(d) *Milk centres*

- Two litres per beneficiary per day for the first 500-1000 beneficiaries
- One litre per beneficiary per day for additional beneficiaries

8.6 Latrines

(a) *Public latrines*	Length	Width	Depth	Persons served
Trench latrine	120 cm	30 cm	60 cm	25
Pit privy latrine (2 seats)	160 cm	80 cm	250 cm	70
Septic tank latrine (2 seats)	170 cm	140 cm	150 cm	70

(b) *School latrines*

- One seat per 30 female pupils
- One seat per 50 male pupils
- One metre urinal per 50 male pupils

SECTION THREE
COUNTRY REPORTS

Health facilities for refugees in Islamic Republic of Iran

H. Salmanmanesh

1. Background

Towards the end of 1979 the first refugees from Islamic State of Afghanistan started to spill over the border into Islamic Republic of Iran. Within a year their number rose to 2-3 million. Since 1987 many Kurdish refugees have come to Islamic Republic of Iran from beyond the western border. Thus the country has borne the second heaviest case-load of refugees in the world.

There is little variety of occupational background among the Afghan refugees. A few were petty tradesmen, a few more were subsistence farmers or even landless tenants but the majority were nomads or semi-nomads, with small or large flocks of sheep or camel herds.

However, according to the official figures in the Ministry of the Interior, the total number of Afghan refugees was reported as 2.29 million, spread over 21 out of the 24 provinces of Islamic Republic of Iran; only three provinces, namely Kurdistan, Ilam and West Azarbaijan, did not have Afghan refugees although they have Kurdish ones. The largest number is in Khorasan, the second largest in Isfahan, followed by an equal number in each of Teheran and Sistan-Baluchistan provinces.

A table showing distribution of refugees by province and percentage of total population of each province is attached as Appendix 1.

In Appendix 2, map No. 1 shows the areas of major refugee presence.

2. Health organization and policies

The national health policy rests on the following principles: the Government is fully committed to the primary health care (PHC) approach; this is being adapted to provide health care services to all population groups, with special emphasis on rural areas. Most of the provinces and districts of the country have well developed PHC systems.

The ongoing PHC network system in Islamic Republic of Iran is as follows:

2.1 Rural settlement health services

Different levels exist for rural settlements.

The first level is for delivery of health and basic sanitation services, given in "health houses" (or health posts for refugees) by community health workers (CHWs), who can easily solve basic health and sanitation problems and treat common diseases. More serious cases can be referred to the second level, where medical facilities are available and a physician and environmental health technician are working (Rural Health Centre). Even more serious cases are referred to district hospitals. Environmental health cases are referred to the environmental health engineer in the district health centre.

2.2 Urban health services

The people as well as the refugees inhabiting cities or their suburbs have access to urban health centres where they can receive primary health care as well as environmental health services.

3. Categories of refugees according to health facilities

According to their refugee settlements, refugees are grouped into three different categories:

(a) The first category consists of those settled in the temporary registered camps; it comprises a population of about 100 000. These refugees have access to the health facilities available in these camps and, through the establishment of an active referral system, they also benefit from improved services.

(b) The second group of refugees, consisting of about 300 000, are those who have been settled spontaneously either in the rural areas (but separate from the Iranian villages) or around some large cities mixed with local people (e.g. in Zahedan). These groups are engaged in their own agriculture and animal husbandry.

(c) The third group, which forms the majority of refugees (about 1.9 - 2 million), comprises those dispersed among the villages and towns, either through registered camps or directly across the border. These refugees use the health facilities available in the area for the Iranian population.

4. Health facilities for refugees

In 1986, a PHC programme was proposed for refugees on the basis of the national PHC network, in order to establish and strengthen first- and second-level delivery of health services

to Afghan refugees living in the spontaneous settlements. Refugees in the urban and rural areas will benefit from the health facilities available there for Iranians.

Based upon this recommendation, the Ministry of Health and Medical Education formulated a Master Plan according to which PHC networks were established in Afghan refugees' spontaneous settlements. These networks were strengthened by provision of needed materials as well as development of sanitary and water supply facilities, with cooperation of UNHCR.

In 1987, according to this Master Plan, 28 health posts out of 48 were installed in the spontaneous settlements at Qaen and Birjand. Meanwhile, 43 Afghan refugees (male and female) were trained through three-month CHW courses.

Map No. 2 in Appendix 2 shows distribution and location of 28 health posts in Burjand and Qaen districts of Khorasan province. In 1989 fifteen more health posts were added to those in the above-mentioned districts, plus five health posts in Khaf district in the same province (see Appendix 2, map No. 3). Eighteen Rural Health prefabricated clinics have also been provided to strengthen the system (see Appendix 2, map No. 4).

Afghan refugees were being trained in CHW courses; in 1988 many female refugees took TBA (Trained Birth Attendant) courses in Sistan-Baluchistan and Khorasan Provinces.

5. Water supply and sanitation

Several environmental sanitation projects have been implemented for refugees in spontaneous settlements. Six water supply projects have been carried out by the General Department of Environmental Health, with financial support from UNHCR, in Sistan-Baluchistan and Khorasan Provinces.

Three water supply and one sewage project for Kurdish refugees in the west of the country as well as three water supply and sanitation projects for Afghan refugees in the east, were to be implemented in 1991 in spontaneous settlements. In addition, a major water supply project has already been started; it will cover 830 villages in the east in which many Afghan refugees (a percentage of about 30-40% of the total in the country) are living. In other areas, they will use the water and sanitation facilities available for the Iranian population.

Appendix 1

TABLE 1. **Distribution of Afghan refugees (AR) by province as of January 1988**

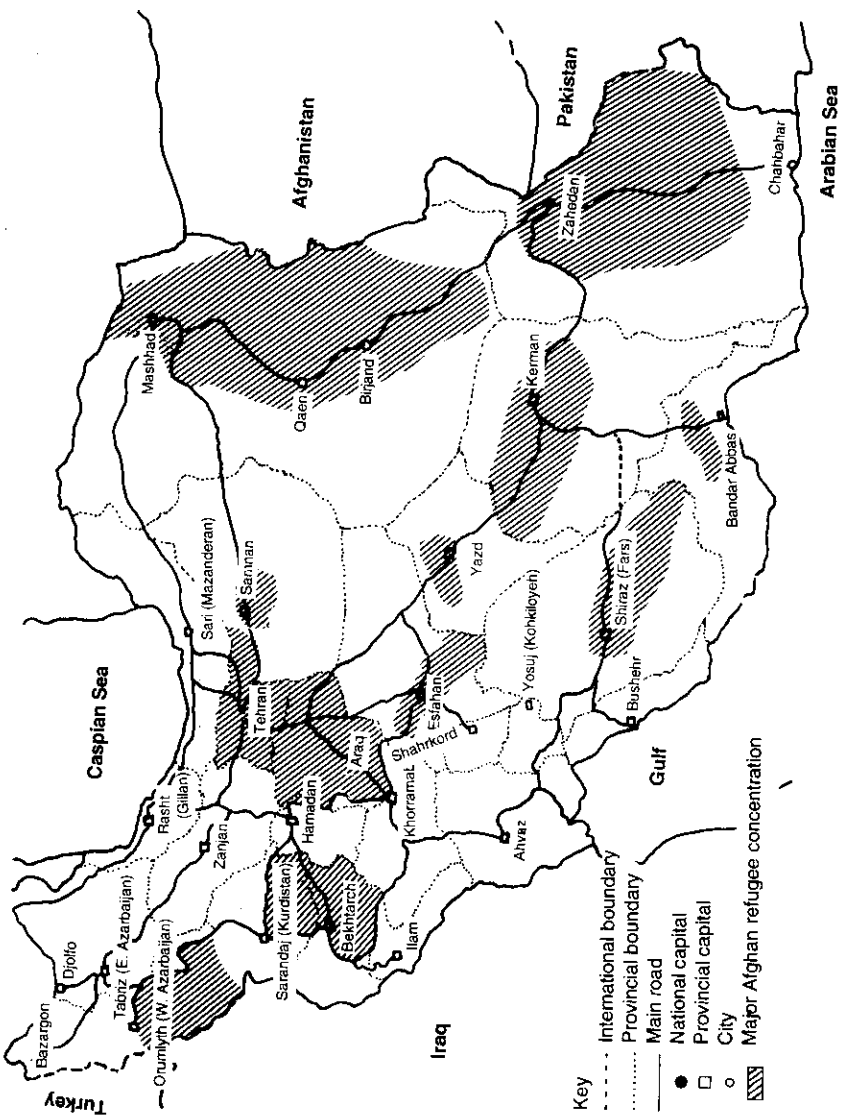
PROVINCE	ISLAMIC REPUBLIC OF IRAN		
	APPROXIMATE TOTAL OF POPULATION	NUMBER OF REFUGEES	% OF ARs TO TOTAL POPULATION
Teheran	9 976 500	290 000	2.91
Markazi	1 250 000	90 000	7.20
Semnan	478 500	45 000	9.40
Yazd	666 000	41 000	6.16
Kerman	1 875 000	130 000	6.93
Khorasan	6 077 800	728 300	11.98
Mazandaran	3 950 000	32 000	0.81
Gilan	2 390 000	6 000	0.25
Lorestan	1 570 000	6 000	0.38
Khouzestan	3 090 000	9 000	0.29
Hormozgan	870 000	44 000	5.06
Esfahan	3 800 000	310 000	8.16
Fars	3 690 000	170 000	4.61
Chahar Mahal & Bakhtiyari	729 000	3 500	0.48
Khohkiluyeh & Boyer Ahmad	472 000	3 000	0.64
Bakhtaran	1 683 000	2 000	0.12
Hamedan	1 755 000	25 000	1.42
Bushehr	622 000	32 000	4.83
East Azarbaijan	4 782 000	1 200	0.03
Zanjan	1 830 000	32 000	1.75
Sistan-Baluchistan	1 373 000	290 000	21.12
Kordestan	1 250 000	--	--
Ilam	439 000	--	--
West Azarbaijan	2 265 000	--	--
Total	57 463 800	22 290 000	

NB
1. Total population of each province extracted from 1986 public census results. Total population in 1988 calculated based on approximately 4% yearly natural increase.
2. Official statistics (number of refugees) provided by Commissionerate for Afghan Refugees, Ministry of Interior.

Appendix 2

Map No. 1

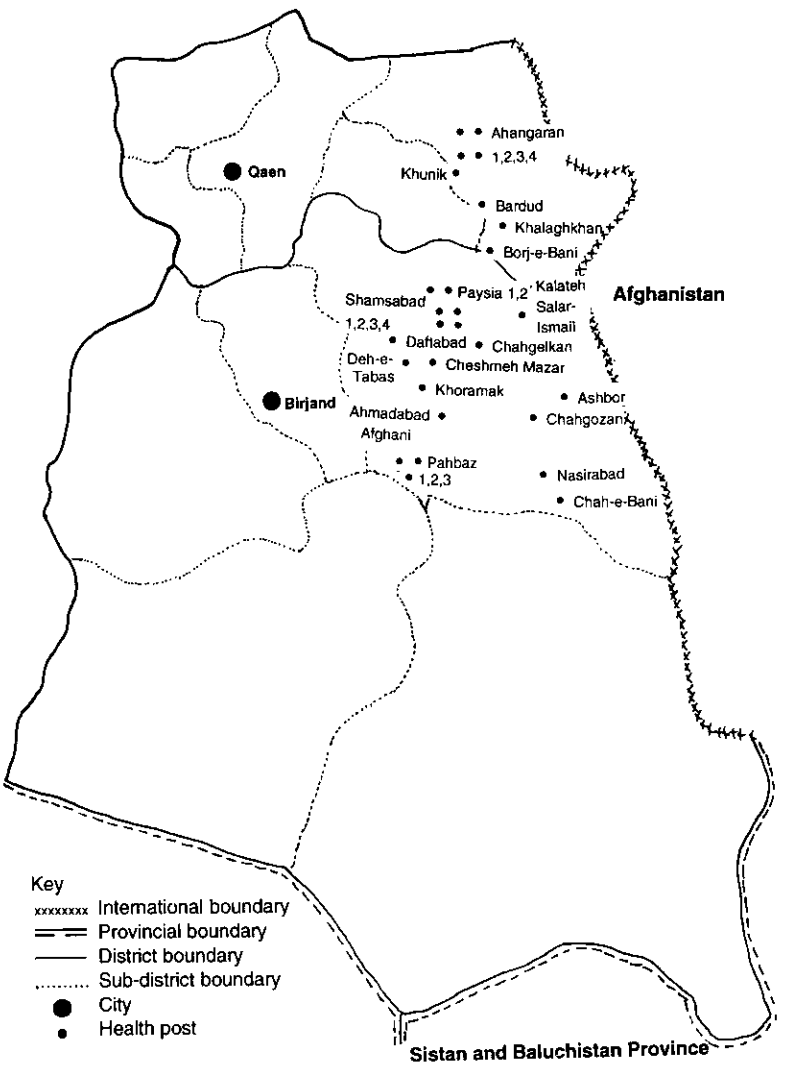
Major locations of Afghan refugees Islamic Republic of Iran



Appendix 2 (cont'd)

Map No. 2

Major Afghan refugee concentration
Locations of 28 health posts in Birjand and Qaen districts of Khorasan Province



Appendix 2 (cont'd)

Map No. 3

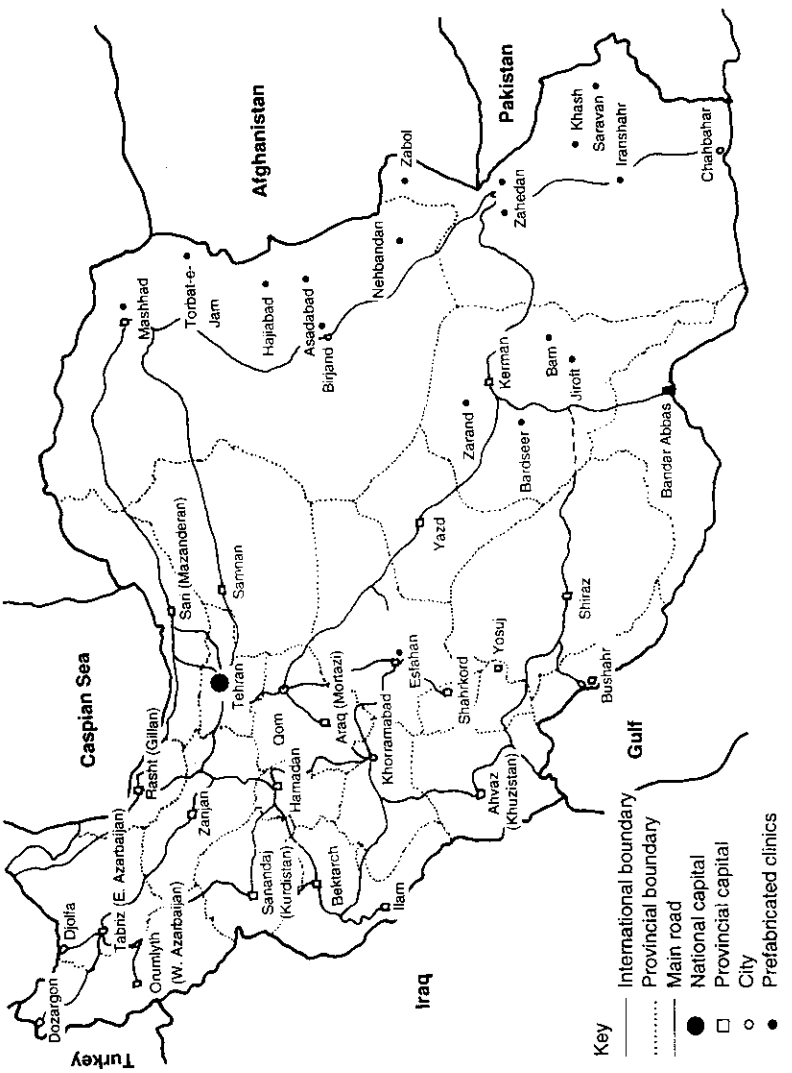
Proposed locations of 20 health posts in Birland and Qaen districts, 1989

Note: Five of the 20 health posts will be relocated in Khaf sub-district according to the MOH priorities

Appendix 2 (cont'd)

Map No. 4

Locations of prefabricated clinics, Islamic Republic of Iran



Environmental health management in evacuee reception centres in Jordan

S. Dlaimi and Hussain Alkandak

1. Introduction

Jordan, being a country bordering on Palestine, has been suffering for more than forty years from the disturbed conditions in the Middle East. The Arab-Israeli wars that took place in 1948, 1967 and 1973 inflicted a huge burden on the country. Hundreds of thousands of Palestinian refugees found their final destination on the East Bank of the Jordan River. These refugees are still living there in semi-permanent residences in more than fourteen camps.

In August 1990, after the invasion of Kuwait by Iraqi forces, Jordan underwent a new wave of emergency conditions. In less than three months more than 850 000 evacuees left Iraq and Kuwait passing through Jordan on their way to their home countries. Jordan, a small country with very limited resources, was unprepared to handle this influx. Nevertheless, the Government of Jordan strove to provide acceptable living conditions for these people.

This paper will deal with the environmental health services provided for the evacuees.

A stream of evacuees started trickling into Jordan by the first week of August 1990, and with increasing intensity reached a level of 45 000 evacuees per day. The Jordanian Government had not anticipated such a mass exodus of people and was not immediately ready to accommodate them or to provide them with the basic needs prior to their travelling on to their own countries.

The first reception centre (RC) was set up in the desert close to the Jordanian-Iraqi border at Sha'lan. This RC was remote from any human settlement and lacked the basic necessities (food, water, shelter, etc.). Conditions there were appalling.

Realizing the dimensions of the problem, the Jordanian Government sought the assistance of local, foreign and international organizations, some of which responded immediately. As a result of their help more RCs were set up near the border as well as in Amman and Aqaba. In addition to these RCs, some evacuees were accommodated in scattered places in the capital, Amman.

2. Environmental health services

2.1 Shelter

In the early stages, the shelters available in the border RCs were not sufficient for all the evacuees. Hundreds of people spent days and nights in the open desert without any shelter except for the few blankets which they had brought with them.

Later on, the Government, with the help of various nongovernmental organizations (NGOs) build several properly equipped camps, provided with tents. Each tent was occupied by 6-10 persons, depending on its size. Some evacuees stayed in buildings in Amman and Aqaba, but in many cases, these buildings were congested with evacuees. Blankets were distributed.

2.2 Food

Evacuees were given essential foods such as bread, milk, eggs, cheese and vegetables. In some RCs, people were able to cook their own meals and buy some food. In other places, especially in the capital, evacuees were served, at least once a day, with hot meals prepared and donated by charity organizations.

Food was provided either through local purchase or by donations from national and international organizations. Rice, onions, potatoes, biscuits, powdered milk, tuna fish, meat, canned vegetables, bread, butter and cheese were among the donated food items. Some food shipments were subjected to health inspections and laboratory analysis, but others were forwarded directly to the organizations concerned without any health quality control measures. At a later stage, however, all food consignments were liable to health inspection and laboratory analysis. Imported foods imposed certain problems:

(1) some had no production or expiry dates;
(2) some had no information about the ingredients;
(3) some foods were of inferior quality and did not comply with food specifications.

Locally provided food was kept under strict supervision by the health authorities.

2.3 Water supply

Water in Jordan is a very scarce commodity. In normal conditions, it is pumped intermittently to the public, especially during summer (non-rainy season). The flow of evacuees aggravated this problem. It was very difficult to cater for all of them. The Ministry of Water and Irrigation struggled very hard to provide the RCs with minimum requirements of drinking water. The abuse of this commodity practised by some people in the RCs made conditions worse. Spillage of large amounts of water and exaggeration by some refugees in the use of water for cleanliness deprived others of their share.

Initially, water was supplied by tankers fitted with large faucets to fill the receptacles carried by the evacuees. This practice caused a great deal of water wastage. Later on, the local authorities provided 2 m^3 elevated and covered metal tanks fitted with taps; these were located between shelters. Although the tanks were covered and elevated 60 cm above the ground, it was noticed that some people bailed water directly from the tanks, thus polluting the whole body of water.

At a later stage, water was supplied to some RCs by pipes. Piped water was brought from the mains and distributed through water-stands, each with a few taps. Prefabricated water tanks were built in some RCs to assure sufficient and continuous supply.

Although water was supplied from safe sources, it was kept under strict supervision by the health authorities through continuous daily sampling and testing.

With respect to quantity, water was supplied irrespective of the actual needs of the people. However, it was recommended by the officials in the Ministry of Health to supply 30 litre/capita/day.

2.4 Waste disposal

2.4.1 Human waste

Human waste disposal was a major environmental health problem. The experience of some RC managements was poor in this respect. Disposal facilities were either inadequate or insufficient. Many people were seen defaecating in the open desert.

The following types of latrines were installed:

(a) Water-carriage latrines consisting of a bowl and connected to a seepage pit proved to be useless and impractical due to (i) the lack of water and (ii) its misuse. RC managers were advised not to build this type.

(b) Non-water-carriage latrines were built by digging a pit and placing a perforated metal barrel inside it. A concrete slab and superstructure were placed on top of the barrel. This type also proved impractical due to the small size of the pit.

(c) A third type consisted of a long, narrow, one-metre-deep trench with wooden beams to support the user. Cloth sheets provided shelter. This type was acceptable for temporary stay only; as people stayed for longer periods of times, sometimes a few weeks, this type presented aesthetic problems as well as health hazards. Uncovered excreta produced objectionable odours. In addition, the wooden beams were not easy to sit on.

(d) The best type, which proved to be both practical and hygienic, was the ventilated improved pit (VIP) latrine. This model was designed by Peter W.S. Lochery and Seth T. Adu-Asah as a joint contribution of the Government of Nigeria, the United Nations Development Programme and the World Bank to the International Drinking Water Supply and Sanitation Decade. It consists of a pit large enough to serve the users for a long enough time. The size of the pit depends on the number of the users and their duration of stay in the camps. A metal slab with appropriate holes supported by metal beams is placed on top of the pit. The superstructure consists of metal or fibre glass sheets. Ventilation pipes with screens on the top orifice help to prevent fly breeding in the pit and remove bad odours. The only disadvantage was the high cost of this type of latrine: a unit of eight compartments costs about one thousand dollars. However, it is possible to reduce the cost if, instead of fibre glass sheets, cheaper material such as wooden boards is used. It was recommended by the Ministry of Health that one latrine could serve 25-50 persons.

2.4.2 Solid waste

Solid waste collection and disposal constituted one of the major environmental health problems in the RCs. Solid wastes were seen everywhere in the surroundings of some RCs because these had not been well planned nor were there workers for collection and disposal of waste. However, some other RCs were well planned and serviced. Two-hundred-litre metal containers were distributed between tents, at the rate of one container per 200 people. Refuse was collected daily and transported to selected sites chosen by the health authorities at least 3

km distant from the RCs and situated to the south-east. Refuse was either burned in the open or just left uncovered. In the RCs in Amman, the Municipality was in charge of these services; refuse was collected and transported daily to the municipal dumping site.

2.5 Insect control

The housefly was the main insect of concern. Its prevalence was associated with garbage and human excreta problems. As mentioned earlier, garbage collection and disposal facilities were at first not adequate. Therefore, it was inevitable to use and apply insecticides; those in the form of ULV or thermal fogging were used whenever deemed necessary. The insecticides used were of the pyrethroid type with low toxicity.

2.6 Bathing facilities

At the outset of the crisis, the evacuees had no bathing facilities; they had to bathe in the open. Cold water only was available; soap was not always used. Therefore it was felt that provision of bathing facilities was a necessity. These facilities consisted of concrete platforms and shelters to afford privacy. Water had to be carried by buckets from the taps to the bathing areas. Wastewater run-off was drained by open ditches where it dried by evaporation. Sometimes, however, it did not dry rapidly and produced small stagnant water ponds, which constituted a source of nuisance.

3. Organizing relief services

The Ministry of the Interior set up a High Committee for the Relief of Evacuees. This Committee consisted of members of all concerned governmental ministries, including that of health. The duties of this Committee were:

(1) Provision of basic needs to the evacuees including shelter, transport, food and security.
(2) Coordination of efforts and services rendered by different organizations.
(3) Establishing contact with international organizations to obtain necessary funds.

The Ministry of Health played a vital role in environmental health aspects of the problem through its Department of Environmental Health and the health directorates in the areas where evacuee RCs were located. The role of the Ministry of Health included the following:

(1) Field visits to inspect the living conditions of evacuees.
(2) Inspection and analysis of imported and local food items.
(3) Coordinating the efforts of international organizations. A weekly meeting was organized in the Department of Environmental Health to discuss problems and follow-up activities.
(4) Insect control by insecticide spraying.
(5) Monitoring of drinking water quality.

4. Conclusions and recommendations

4.1 Conclusions

1. The flow of evacuees from Iraq and Kuwait at the outset of the Gulf Crisis in August 1990 inflicted a great burden on the economic, health and environmental conditions in Jordan.

2. Small countries like Jordan, with limited resources and capabilities, cannot efficiently handle environmental health problems emanating from such emergency situations without the help of international organizations.

3. Coordination between all the parties involved in the relief services was not satisfactory.

4.2 Recommendations

1. A Disaster and Relief Office should be set up in the Eastern Mediterranean Region (EMR) of WHO to deal with any emergency situations that may arise in any member country.

2. A national environmental disaster contingency plan should be prepared for each country to handle such emergencies.

3. Coordination between governments and international organizations should be intensified and strengthened.

4. More specialized courses and workshops should be offered and held to train the personnel concerned in the management of environmental health services in emergencies.

Environmental health management in refugee areas in Lebanon

A. Baltagi and S. Massouh

Summary

The civil war in Lebanon has been the cause of the displacement of a major part of the population including a high percentage of governmental personnel.

This has led to disorder in the health services in general and environmental health activities in particular.

The economic crisis caused by the civil war led to high inflation and lack of security.

Destruction of buildings and infrastructure by intensive and indiscriminate shelling of innocent people and properties caused high rates of victims, injuries, nervous disorders and terror.

Interruption of the water and electrical supply in the city of Beirut and its suburbs, in addition to poverty, alienation and spread of communicable diseases, led to a high rate of displacement within Lebanon and migration abroad.

Reorganization of the Ministry of Health and Social Affairs is needed to cope with the health aspects of the problem and further cooperation is needed with international agencies such as WHO, UNRWA and others.

1. Introduction

This paper presents the results of an enquiry carried out with the Field Health Officer, Dr A.H. Dakwar, and the Field Sanitary Engineer, Mr H.M. Anid, at the Headquarters of UNRWA in Sebline, Lebanon, and with the Director-General of Social Affairs in Lebanon, Mr M. Sadek.

The objectives of the paper are:

(1) To describe the situation prevailing in Lebanon due to the displacement of the Lebanese people resulting from the civil strife prevailing since 1975.

(2) To outline the situation regarding environmental health management in the Palestinian refugee camps distributed all over Lebanon.

2. Present situation

For the last fifteen consecutive years, Lebanon has continued to be the scene of both international and national conflicts, translated into violent actions throughout most of its territory. Since the beginning of 1989 up to the present the eastern part of Beirut and the northern part of the District of Mount Lebanon have witnessed severe armed conflicts, resulting in great displacement of the population in those areas; concurrently, further military conflicts have taken place in the south of Lebanon, where regular clashes have occurred between the Lebanese resistance movement and Israeli forces on the one side and between the Palestinian resistance and Israeli forces on the other. This has resulted in further population displacements and impaired progress in all environmental work which otherwise could have been carried out in this area.

Furthermore, the economic prosperity experienced by the Lebanese people before 1975 greatly deteriorated as a result of these hostilities. An economic crisis occurred, marked by severe inflation: for example, before 1975, the exchange rate of the Lebanese pound was US$1 = LL2.50, while at present (1991) US$1 = LL650. This marked devaluation of the currency led to a significant increase in the cost of living, a high unemployment rate and economic hardship for hundreds of thousands of families.

Many authorities in various parts of the country expressed great concern regarding ever-increasing poverty, alienation, social disorganization, pollution (including noise pollution) and restricted living space. A considerable number of families emigrated to Australia, Brazil, Canada, and USA as well as to Africa and Europe.

3. Displaced Lebanese population

Due to political instability, the number of displaced families amounted to approximately 250 000 in 1989; almost 85% of the population of the eastern part of Beirut was displaced to various other parts of the country.

This continuing displacement led to great disruption in governmental services such as water supply, electricity, medical services, refuse collection and disposal, food quality control, education, public safety, noise and air pollution and housing.

Because of hostilities between Lebanese factions in the western part of Beirut and its suburbs, electrical power installations were severely damaged, causing the failure of the electrical supply. Further, the water purification plants and pumping stations of Beirut were shelled; this resulted in very severe shortage of potable water.

To overcome the water shortage problem, the Ministry of Water Resources, with the help of the Army and the Department of Civil Defence, together with nongovernmental agencies, tried to cope with the problem by supplying those in need with water from nearby wells and springs by means of trucks equipped with water cisterns. Families who are financially able to do so are still buying their water from private distributors.

Buildings equipped with well installations pumped water by using standby generators; others used private cars to transport potable water from nearby villages.

The underground water table in Beirut and its suburbs are polluted with E. coli, due to the infiltration of sewage and sea water.

Enteric diseases have been reported, particularly during the warm season, due to the lack of (a) an adequate safe water supply and (b) refrigeration facilities.

Through the media, the Ministry of Health requested the public to add chlorine solution to all pumped water or to fill glass bottles with water and place them in direct sunlight for several hours before using the water for drinking purposes or to boil it. For infant use, it is necessary to use bottled or boiled water.

To overcome the shortage of electricity in health establishments, factories, shops, dwellings, etc. people have purchased standby generators to supply their needs, at least partially.

Governmental agencies were unable to offer their normal services to the community due to lack of: security, transportation facilities, funds and spare parts.

Municipal services, such as collection and disposal of solid wastes, became inefficient due to lack of security and displacement of labour, as well as lack of both funds and equipment. This resulted in the accumulation of stacks of refuse in the streets of Beirut and its suburbs. This in turn led to greatly increased breeding of flies, mosquitoes and arthropods affecting human health.

Due to the severe shortage of water, personal hygiene and cleanliness could not be adequately observed; moreover, refrigerators in grocery stores and dwellings could not be used due to shortage of electricity.

School education was interrupted in 1989 in most parts of the country; almost 50% of students at all levels were unable to attend their classes due to lack of security. Since February 1990 to date, students in the eastern part of Beirut and its suburbs have not been able to attend classes for the same reason.

Due to hostilities among factions throughout most of the territories of Lebanon and the resulting damage to their homes, many families were displaced and some villages were completely destroyed and their populations wiped out.

Families moved to safer places, either to relatives' houses, or to take shelter in school buildings, mosques, convents, hotels, etc., in coastal villages or in the mountains. Some families constructed new shelters on governmental or privately owned land. These new shelters are now overcrowded; this results in lack of privacy, low standards of hygiene and the malnutrition associated with communicable diseases.

Noise from bombardment and running standby generators became a health hazard in Lebanon, causing fear, nervous disorders and sleeplessness.

Air pollution caused by smoke and soot ejected by the standby generators resulted in pulmonary disorders, a problem which cannot be adequately tackled by the health authorities at present.

The treatment of victims of shelling consumed 95% of the health budget. In 1989, expenditure on medical care in private hospitals reached the amount of LL 20 billion.

4. Palestinian refugee camps in Lebanon

There are approximately 300 000 Palestinian refugees registered in Lebanon since 1948, distributed in 14 camps situated in various parts of the country.

A number of well-to-do refugee families left the camps and are now living in individual dwellings among the Lebanese community.

By the decision of the United Nations, UNRWA was established as the agency responsible for offering essential services to the refugees. These include health services, covering curative and preventive medicine, nursing, environmental health services and nutrition programmes.

The curative medicine division includes the pharmaceutical and medical supply branch while the preventive medicine division includes the health education branch.

According to the 1988 Annual Report of the Director of Health of UNRWA, the Directorate of Health continues to attach great importance to team work, coordinated staff planning and consultation in the development of health projects and evaluation of the health programme.

Comprehensive three-year, medium-term plans were established for the general management and three sub-programmes, i.e., medical care services, nutrition, and supplementary feeding and environmental health services, were established and are reviewed annually.

The health budget is financed almost entirely from voluntary contributions both in cash and in kind, mainly from governments, intergovernmental and nongovernmental organizations.

In 1989 expenditure on health in Lebanon amounted to US$6 493 000.

UNRWA provides vocational training programmes for paramedicals, pharmacists, laboratory technicians, public health inspectors, physiotherapy technicians and dental hygienists; it also offers continuing training programmes to achieve the objective "Health for all by the Year 2000".

The area of training covers primary health care (PHC) activities, rational use of essential drugs, EPI and cold chain, maternal and child health, family planning, community health education, environmental health, laboratory techniques and management.

Environmental health services provided in Lebanon by UNRWA for refugees residing in camps with the cooperation of the host government, municipalities and local bodies, includes: provision of potable water in sufficient quantities to meet domestic needs; collection and disposal of solid and liquid wastes; management of stormwater; and control of insects and rodents of public health importance.

The staff engaged in these services have gradually become involved in health education activities, in conformity with the principles of primary health care.

UNRWA policy is to provide basic sanitation services to camp populations of a standard compatible with the quality of services generally provided by municipalities in Lebanon or by the Ministry of Health and Social Affairs.

5. Recommendations

It is recommended that:

(1) Civil strife be stopped and strong backing be given to the central Government to restore order and peace in the country.

(2) The economy of Lebanon be restored as a matter of urgency, in order to rebuild the towns and cities destroyed during civil strife.

(3) Loans and donations to support various aspects of life be obtained, with particular emphasis on water supply and purification systems, electricity supplies and means of collection, treatment and disposal of solid and liquid wastes.

(4) The health departments of the Ministry of Health and Social Affairs in Lebanon be reorganized; this is urgently needed, in order to cope with the problems resulting from civil strife, and to ensure safety and stability for governmental personnel at all levels.

(5) Evaluation of health situations in various parts of the country be undertaken speedily in order to promote environmental health activities.

(6) Statistical data be made available to evaluate the current standard of environmental health.

(7) Cooperation between the Lebanese Government and UNRWA be promoted in the following areas:

(a) Professional and vocational training of health personnel in general and environmental health personnel in particular.
(b) Seeking expert advice from WHO and other international agencies jointly for the Ministry of Health and Social Affairs, and UNRWA programmes in Lebanon.
(c) Involvement of the community at all levels in environmental health activities.
(d) Integration of camps' water supply systems, sewerage schemes and solid waste disposal within the activities of the municipalities.

Refugees and sanitation in the Eastern Region of Sudan

El Baghir Nasr Dafalla and Bakri Yassin Taha

1. Introduction

Sudan is among the poorest 25 countries in the world (LDCs). Its population is estimated as 22 million (1983 census) with a growth rate of 2.5% and a per capita income of Sudanese £400 (World Bank, 1983). The infant mortality rate is 140-150/1000 (Ministry of Health Annual Report - 1984).

Sudan is surrounded by eight African countries, four of which (Ethiopia, Chad, Zaire and Uganda) have suffered from internal political instability, causing their nationals to seek asylum in Sudan.

The majority of refugees who cross the border settle in the Eastern Region of Sudan. The first influx to be offered official recognition arrived in Sudan in 1967, with a total number of 30 000. The second influx arrived in 1970 (24 000) and after 1975 the influx of refugees into the country became a daily occurrence, reaching the current total of 740 000, apart from those who settled in the west and south of the country (220 000). More than 90% of refugees are illiterate. There are both homogeneous communities composed of different tribes and several small ethnic minorities. Muslims and Christians comprise the majority. Most of the refugees are of rural, agricultural, nomadic or semi-nomadic background. Urban refugees are fewer, with diverse skills and educational levels. Their health education background is very poor. They are not accustomed to latrines, but prefer to defaecate in the fields.

2. Refugee settlements

Of the 740 000 refugees settled in the Eastern Region, only 277 312 have been accommodated in settlements or reception centres. Children under five constitute 12.6% of the total (34 989). Settlements can be classified as follows:

(1) Land settlements	(for families with a previous background of agricultural activities)
(2) Wage-earning settlements	(situated near the National Agricultural Schemes to provide labour)
(3) Urban settlements	(for those who were urban dwellers in their home country)
(4) Reception centres	(for newly arrived refugees)

The total number of settlements and reception centres in the Eastern Region is 32. Their population varies from 3000 to 20 000 per settlement or reception centre. Some reception centres, e.g. W.Sherefe, even accommodate more than 40 000 refugees.

The greatest remaining portion of refugees integrate in the main towns and villages of the Region and share the existing health facilities with the local population. This is exemplified by the pressure on hospitals: 66% of the outpatients in Kassala Hospital are refugees, while in Gedaref Hospital they account for more than 50%.

3. Refugees' future

The future of the refugees in Sudan is not known. Some, who entered Sudan in 1967, are still there, with no sign of returning to their countries of origin. Unless the causes of their being refugees are resolved, they are likely to remain in Sudan indefinitely.

4. Sanitation programme objectives

In order that the sanitation programmes in refugee settlements and reception centres may fulfil their purpose, the following objectives have been clearly set in the relevant agreements:

(a) To ensure the removal and disposal of human excreta and other waste.
(b) To control insects and rodents in order to minimize the incidence and spread of communicable diseases.
(c) To improve the general health conditions of the refugees in all settlements and reception centres.

The following indices provide means of evaluating whether these objectives are being achieved.

1. The number of satisfactorily constructed latrines.
2. The utilization of latrines by refugees.
3. The number and frequency of vector control measures undertaken.
4. Number of staff present on site to collect refuse, spray and disinfect settlement sanitary facilities, conduct educational activities, construct and maintain latrines and report on activities.
5. The average monthly mortality rate.
6. The incidence of vector-borne diseases among refugees compared to that among the local population.
7. The frequency of garbage collection.

5. Sanitation systems applied in refugee settlements and reception centres in the Eastern Region of Sudan

There are two stages in implementing sanitation systems for refugees. In the first stage of an emergency, when a new influx of refugees starts crossing international borders to enter the

country, they are usually accommodated in reception centres where the main priorities for sanitation include:

5.1 Proper control of human excreta disposal

This is achieved through a combined system of demarcated defaecation areas and trench latrines. Experience has shown that refugees prefer defaecation in fields to using latrines, particularly trenches or communals. For this system to serve its purpose, enough manpower has to be provided for collection and burial of human excreta on a routine daily basis, and funds made available for local purchase of equipment, periodic insecticidal operations and fly control, which are all of vital importance. The system seems to work well during the rainy season. It is to be noted that refugee communities hardly participate in this process.

5.2 Solid waste disposal

Solid waste disposal is carried out through the employment of some refugee workers and participation of the community. Refuse is collected in some demarcated communal places from where it is loaded on to tractors and off-loaded at the final disposal site, which is situated one or two kilometres from the reception centre. Incineration of dry refuse is the most common means of final disposal.

In addition, dumping of broken glass, tyres, tins, etc., is carried out. Hospital pathogenic waste is burnt in small barrels kept at the corners of the clinic areas or specially transported and dealt with immediately at the disposal site.

6. Supervision of water supply and protection of sources

In the next stage of an emergency, efforts concentrate on the protection of water sources and availability of enough water supply. Sources of water include:

6.1 Surface water (rivers)

Refugees consume raw water directly taken from rivers. The applicable protective measures are the division of rivers into three parts: the upper stream for drinking water, the middle part for washing and bathing, and downstream for animals (these measures were applied in 1985 in Wad-Kawli Reception Centre on the Atbara River). The second protective measure is the selection of sites for refugee reception centres within a walking distance of not less than five kilometres from any river (Shagarab Reception Centres). This measure is taken to protect river water from contamination, since most of the local population live in towns and small villages along these rivers and depend entirely on this water for domestic use. Local regulations for the protection and organization of such water sources are applicable in all such villages and towns.

6.2 Temporary system for piped water

This system is also applied in reception centres sited along rivers. Although the systems supply refugees with enough water, the quality of water is not guaranteed (e.g., the Oxfam system in Safawa Reception Centre, and the German one in Shagarab Centres). Pumps are installed on river banks to pump water to storage tanks from which water is distributed into a system of standpoints for refugees to use. Special care is taken with wastewater; it is important to construct a platform with proper slopes for drainage purposes.

6.3 Vector control

This activity depends principally upon the elimination of breeding sites, i.e., control of excreta disposal, refuse, waste and rainwater drainage. Periodic insecticidal operations are adopted whenever vector population density is beyond control and there is an indication of a rise in the number of cases of some specific disease related to a particular vector. Malathion powder 50% is used for malaria control, Agna-Reslin for fly control (ULV - machines) and Abate for the control of the aquatic stage of mosquitoes.

Delousing activities are well implemented to eliminate body, head and pubic lice. Other methods include boiling of clothes and shaving of hair. Propoxur 1% is used in refugee emergency situations for delousing activities.

6.4 Health education activities

Due to the low standard of personal hygiene and the poor background of health education among the new arrivals, a system of community outreach has been adopted within the guidelines of health services in general. A number of home visitors is to be employed, under intensive daily training, to carry out the following responsibilities:

(a) Educate refugees to use the defaecation areas and trenches rather than practising indiscriminate defaecation.
(b) Educate refugees to practise handwashing immediately after defaecation.
(c) Educate refugees to assist in the control of diarrhoeal diseases through:
    - ORS usage and the role of mothers or child-carers in this
    - Control of stools using the "cat" system.
(d) Check on bedridden patients and explain the importance of consulting a doctor.
(e) Follow up tuberculosis patients and malnourished children.

6.5 Food supervision

This activity is carried out to ensure that locally purchased food, as well as food internationally procured, is fit for human consumption and complies with the National Act of Food Supervision and Quality Control 1973.

7. Sanitation activities in permanent settlements

Sanitation activities in permanent settlements are very similar to those applied in emergency situations, except that some programmes, such as that for the disposal of human excreta, are incorporated into the annual budgets for development work. Such activities include:

(1) Construction of permanent family VIP (ventilated improved pit) latrines in all refugee settlements. The idea behind this programme is to assist radically in solving and controlling indiscriminate defaecation in and around the settlements. Also the programme anticipates a period of stay for refugees of many years. It is therefore assisting in controlling some of the environmental factors that lead to the spread of diarrhoeal and related diseases.

For this programme to be successful, there are two major components. The first is the contribution of UNHCR in the procurement of some building materials such as cement, iron bars, chicken wire and wood. The second is the contribution of refugees in the digging of pits and the building of superstructures: thus refugees contribute in the reduction of the overall cost and fulfil the objective of community participation.

(2) The construction of slaughterhouses, as well as butchers' and vegetable sheds is also of a developmental nature. It can also contribute to the control of food quality and make supervision much easier: taeniasis is one of the prevailing diseases, particularly among Ethiopian refugees.

(3) Emphasis on the construction of permanent reliable water sources which will ensure enough water supply of good quality, is well adhered to in permanent settlements. For settlements sited near rivers or irrigated schemes, slow sand filtration systems are in use, while deep boreholes supply the rest of the settlements.

Both systems are connected to overhead tanks and hence to a distribution system whereby water is collected by refugees from standpoints.

8. Constraints affecting the sanitation programme in Eastern Sudan

In spite of the above-mentioned objective and the designated programme activities for both settlements and reception centres, sanitation has been subject to some constraints which have affected the flow of services and the maintenance of the programme. These constraints include the following:

8.1 Labour force reduction

Due to a financial crisis UNHCR decided in October 1989 to reduce manpower as well as funds allocated for the running of services in all programmes designed for refugees in Eastern

Sudan. Sanitation is one of the areas affected. The labour force originally employed to undertake sanitation activities was drastically cut. This reduction amounted in some areas to 90% and in others it varied from 20% to 80%. (See Appendix 1.)

8.2 Reduction of budget allocations

The budget allocations for sanitation programmes have been subject to drastic cuts in 1989 and 1990. An arbitrarily allocated fund of Sudanese pounds 2000 for different settlements and reception centres was approved by UNHCR. These funds are specifically allocated for the purchase of local equipment and other materials necessary for sanitation activities. They are in fact set arbitrarily, regardless of actual needs, camp population or the volume of work to be done.

This has resulted in the non-fulfilment of the requirements in materials necessary for the running of the sanitation services. Funds allocated by UNHCR meet only 2.5% to 4% of real needs. (See Appendix 2.)

Failure to properly collect and dispose of human excreta resulted in very unpleasant living conditions with a large fly population and breeding sites. The Wad Sherefe and Safawa Reception Centres were the most affected. After official visits paid to these areas by the regional authorities (March 1990), a request was made for immediate intervention to alleviate such problems. This indicated the dissatisfaction of the region with the sanitation programme, especially in these reception centres, which are considered as entry points for refugees crossing the borders into the country. In such centres a high standard of sanitary provision is required to counteract possible outbreaks of gastrointestinal diseases or any other disease of public health importance.

8.3 Delay in receiving internationally procured insecticides

It is well documented that insecticides for the control of vector-borne diseases are always received late. In Sudan, these insecticides are supposed to be received in March every fiscal year and distributed by June just before the season of malaria transmission. In 1989 and 1990 insecticides were received in October.

Malaria is a disease of high prevalence among refugees. Its proper control is closely linked with early preparation and organization of programme resources at the correct, scheduled time.

Refugees suffered a major malaria epidemic in 1988. Dr C.A. Malcolm, consultant entomologist, stated in his report (TSS 58/77): "The high malaria rate in 1988 among refugees compared to the preceding year was almost universally blamed on a shortage of insecticides". He added that there were other contributing factors such as the amount of rainfall that year and the actual definition used for cases of malaria.

8.4 Cessation by UNHCR of the construction programme of VIP latrines in refugee settlements

The above programme was stopped in 1989. It was assumed by UNHCR that VIP latrines were not being used by refugees. However, in 1984, prior to the implementation of this

programme, a pilot project for family latrines in two settlements (Tenedba and Mafaza) was agreed upon by both UNHCR and the Sudanese Commissioner for Refugees. The experiment included 65 families in each settlement, for whom family latrines were constructed. The project was assessed after one year (1985). All indicators showed that it was a success. Since then the programme of construction was included in the annual budget in all refugee settlements. It was intended to attain total coverage with family latrines by 1990-1991.

Due to financial reasons, as well as delays in the international procurement of some building materials, progress was somewhat slow. The highest coverage reached in the settlements was 59% while the lowest was 3.7%.

The programme is still half completed. It is to be stressed that the problem of human excreta disposal may remain unsolved as long as refugees remain in Sudan. (See Appendix 3.)

The incidence of diarrhoeal diseases, hepatitis, parasitic worms and schistosomiasis in refugees camps in 1989 is shown in Appendix 4. No doubt several interrelated factors prompted the prevalence of such diseases, but the most likely contributing factors include poor sanitation and inadequate water and food.

8.5 The adoption of a water fee collection strategy in refugee settlements

As a long-term objective UNHCR and the Office of the Sudanese Commissioner for Refugees agreed in 1988 that a water fee collection strategy be adopted and implemented in refugee settlements as from 1989-1990. The revenue collected would be used for:

(1) Payment of salaries of the water project staff.
(2) Assisting in the purchase of fuel, lubricants, spare parts of pumps and water systems.
(3) Covering any unforeseen expenses related to the water project.

This new strategy may have had some negative impact on refugees' health. In settlements sited near the irrigation schemes and rivers, refugees tend to avoid payment of fees by taking their drinking water directly from canals or rivers, rather than using the already established distribution points for reliable drinking water in their settlements.

A report prepared by Dr Alex Mercer, a biostatistician in the Refugee Health Unit, suggested that the incidence of four major diseases could have been affected by the end of 1989. Diarrhoeal diseases, schistosomiasis, hepatitis and parasitic worms could all be transmitted in this way, although there are other interrelated factors that might account for the high prevalence in camps situated near canals or rivers.

Appendix 1

Labour reduction

CAMPS	SANITARY OVERSEER	ASSISTANT SANITARY OVERSEER	WASTE DISPOSAL WORKERS	VECTOR CONTROLLER	SANITATION EDUCATOR	STOREKEEPER	GUARD	DRIVER	1989 LEVEL OF WORKERS 1.1.1989	1990 LEVEL OF WORKERS 1.1.1990	% OF LABOUR REDUCTION
W. Sherefe	2	3	57	10	-	-	2	2	76	63	19.4
Shagarab 1	1	1	20	5	1	-	-	-	28	17	39.3
Shagarab 2	-	1	22	2	1	-	-	4	30	10	66.7
Shagarab 3	-	1	17	1	1	-	-	-	20	16	20
Fau 5	1	1	5	2	2	-	-	1	12	7	41.7
Kilo 5											
Kilo 7	1	3	6	3	-	-	-	1	14	6	57.1
A/Sid											
W. Elhileu	1	1	15	5	1	-	-	-	23	15	34.8
Umrakoba	1	1	3	1	1	1	3	2	13	11	15
Kilo 26	1	2	20	4	-	-	-	3	30	24	20
K/Girba											
Tenedba	-	1	3	1	1	1	2	-	9	1	88.9
A/Rakham	-	1	3	1	2	1	3	1	12	1	91.7
W/Awad	-	1	2	1	1	1	4	-	10	1	90
Mafaza	-	1	3	1	1	1	2	1	10	1	90
Hawata	-	1	3	1	1	1	3	1	11	1	09.9
Umgulja	1	-	6	-	1	-	-	1	9	8	11.1
Abuda	-	2	7	-	-	-	-	-	9	6	33.3
Um Ali											
Salmin											
Adigrar											
Umbrush	1	3	12	3	-	-	-	1	20	16	20
Umzuzur											
Dehema											
Um Sagata											
Karkora	-	-	9	3	1	-	2	2	17	10	41.1
Umgurgur	1	-	5	2	1	-	2	-	10	6	40
Tawawa	1	-	19	4	1	1	-	1	27	1	96.2
Safawa1	1	1	40	-	-	-	-	-	42	32	23.8

Appendix 2

Breakdown of equipment needed/year/camp

CAMPS	POPU-LATION	NO. OF SANI-TARY	SHOVELS		RAKES		BACK HOES		PICKS		WASTE BASKETS		SWEEPERS		GRASS CUTTERS		TOTAL COST
			NO.	COST	NO.	COST	NO.	COST	NO.	COST	NO.	COST	NO.	COST	NO.	COST	
K/Sherefe	61 407	52	52	10 400	156	11 700	52	13 000	52	7 800	1 248	24 960	1 248	12 480	52	520	80 860
Shagarab 1	17 111	30	30	6 000	90	6 750	30	7 500	30	4 500	720	14 400	720	7 200	30	300	46 650
Shagarab 3	8 304																
Safawa 1	26 829	20	20	4 000	60	4 500	20	5 000	20	3 000	480	9 600	480	4 800	20	200	31 100
Fau 5	3 380	7	7	1 400	21	1 575	7	1 750	7	1 650	168	3 350	168	1 680	7	70	10 885
El Suki	6 730	6	6	1 200	18	1 350	6	1 500	6	900	144	2 880	144	1 440	6	60	9 330
Heleau	9 193	10	10	2 000	30	2 260	10	2 500	10	1 600	340	4 800	240	2 400	10	100	19 660
Umrakuba	14 661	9	9	1 800	27	2 025	9	2 250	9	1 360	216	4 320	216	2 160	9	90	13 995
Girba/Kilo 26	22 732	15	16	3 000	45	3 375	15	3 750	15	2 250	366	7 200	360	3 600	15	150	23 325
Karkora	12 381	6	6	1 200	18	1 350	6	1 500	6	900	144	2 880	144	1 440	6	60	9 330
Lumgurgur	7 986	5	5	1 000	15	1 125	5	1 250	5	750	120	2 400	120	1 200	5	50	7 775
Umgulja	5 513	5	5	1 000	15	1 125	5	1 250	5	750	120	2 400	120	1 200	5	50	7 775
Abuda/Ukali	7 779	5	5	1 000	15	1 125	5	1 250	5	750	120	2 400	120	1 200	5	50	7 775
Um Sagata	35 094	12	12	2 400	36	2 700	12	3 000	12	1 800	288	6 760	288	2 880	12	120	18 660
Total	239 100	182	182	36 400	546	40 960	182	45 000	182	27 300	4 368	87 350	4 368	43 680	182	1 820	283 010

Item	Cost/Unit (LS)	No. per worker per year
Shovel	200	1
Rake	75	3
Pack Hoe	250	1
Pick	150	1
Waste Basket	20	24
Sweeper	10	24
Grass Cutter	10	1

Appendix 3

Availability of latrines

Camps	Total of population end of 1989	Approx-imate number of families	Number of latrines con-structed	Number of latrines collapsed	Number of latrines operative	% of families covered
W/Sherefe	42 932	8 585	317	17	300	3.5
Shagarab 1	21 161	4 232	469	23	446	10.5
Shagarab 2	12 466	1 247	714	0	714	57.3
Shagarab 3	13 642	2 728	250	18	232	8.5
Safawa	25 905	5 181	76	0	76	1.5
Reception	116 106	23 221	1 826	68	1 768	7.6
Fau 5	3 999	800	—	—	—	—
Kilo 5	2 325	465	97	5	92	19.8
A/Sid	2 670	670	75	0	75	14.6
Kilo 7	1 846	369	47	0	47	12.7
K/Helew	9 154	1 831	182	10	172	9.4
Umrakuba	14 127	2 825	550	67	483	17.1
K/Girba	10 912	2 182	160	0	160	7.3
Karkora	12 246	2 449	767	10	757	30.9
Kilo 26	11 643	2 329	225	10	315	9.2
Tawawa	15 753	3 151	1 392	0	1399	44.4
A/Rakham	3 658	732	334	—	334	43.8
Tenedba	2 534	507	295	—	295	52.8
K/Awad	1 911	382	148	—	148	54.0
Kafaza	3 280	650	298	—	298	43.8
Hawata	4 135	827	327	—	327	59.6
Umgurgur	7 894	1 579	780	10	770	48.8
Umgulja	5 464	1 095	238	0	238	21.8
Abuda	5 006	1 001	167	0	167	16.7
Ukali	2 695	539	118	0	118	21.9
Salkin	6 990	1 399	58	0	58	4.1
Adingpar	4 540	906	—	—	—	—
Umbrush	5 560	1 112	40	0	40	3.6
Umzuzur	4 720	944	—	—	—	—

Appendix 3 (cont'd)

Availability of latrines

Camps	Total of population end of 1989	Approx-imate number of families	Number of latrines con-structed	Number of latrines collapsed	Number of latrines operative	% of families covered
Dehama	5 950	1 190	—	—	—	
Um Sagata	7 516	1 503	93	0	95	6.2
Settlements	156 428	31 286	6 398	112	5 286	20.1
All Camps	272 534	54 507	8 224	270	8 054	14.8

Appendix 4

Incidence of water-related diseases by camp: 1989

1. Four of the categories of disease under which morbidity is recorded in the monthly health surveillance reports from the camps can be classed as water-related. Bilharzia [schistosomiasis] is the most specifically water-borne disease whereas the other three categories - worms, hepatitis and diarrhoeal disease - may involve a large component of food-borne infection.

2. The type of worm infestation is not recorded, in the monthly reports for example, so there is no indication of the proportion of cases which may be linked with contamination of water supplies. Similarly, the type of hepatitis is not specified, and even if hepatitis A is largely responsible, food-borne transmission may be involved. Many cases of diarrhoea may reflect contamination of food rather than of water, while among young children the symptoms may be a secondary complication of some specific childhood epidemic infection such as measles.

3. Despite the limitations of the data, incidence rates for these four diseases provide some indication of which camps may have the most problems with contamination of standing water and drinking water. In fact, two camps clearly stand out as being the worst for water-related diseases - Kilo 7 and Awad Sid.

4. Kilo 7 had the highest incidence rate for worms in 1989 and the second highest incidence rate for the other three diseases. Using an index obtained by adding the rankings for each of the four diseases, Kilo 7 was the worst camp.

5. Awad Sid had by far the highest incidence rate for bilharzia, and nearly half the cases recorded in the settlements were in this relatively small camp. The camp also recorded the highest incidence rate for diarrhoeal disease and the second highest for worms, and it ranked second-worst on the index of all four diseases despite the relatively low incidence of hepatitis.

6. Mafaza and Umburosh had high incidence rates for hepatitis in 1989, but relatively low incidence rates for the other three diseases.

7. About 4% of all the cases of worms were recorded in two camps, Safawa and Umrakuba, which had the highest incidence rates after Kilo 7 and Awad Sid. Umrakuba was in fact the third worst camp on the index of all four diseases combined, but Safawa had relatively low incidence rates for the other three water-related diseases.

8. Kilo 5 and Towawa ranked fourth and fifth worst on the index of all four diseases. Both camps had relatively high incidence rates for bilharzia, worms and hepatitis, though not for diarrhoeal disease.

Alex Mercer
Biostatistician
Refugee Health Unit

30 April 1990

Measures for refugees' healthy environment in Syrian Arab Republic

A.J. Al Hamid and M. Derani

There are many camps in Damascus City for refugees: Lebanese and Syrian people expelled from their homeland by Israeli forces. They comprise a great number, of different ages.

It would take a long time to discuss the severe sufferings of those people who were forced to leave their home and properties.

Environmental health is vitally important, along with preventive medicine. In Syrian Arab Republic, the following measures are taken:

1. Vaccination
2. Cleanliness
3. Eliminating rodents and vectors by using insecticide/rodenticides.

1. Individual health

1. Establishing health centres for refugee camps, with availability of drugs.
2. Monitoring and testing drinking water and wastewater periodically.
3. Ensuring availability of ambulances for transferring patients to hospital if needed.

2. Care of sewerage

It is ensured that hygienic principles are followed in the eradication of human excreta and in the disposal of solid wastes and wastewater.

Refugee Situation in Yemen

Zaki A. Kaid

1. Introduction

It should be stressed that, in Yemen, there is little experience of refugee and refugee-related situations. With regard to the definition of refugees, they are considered to be those persons who have crossed international frontiers in search of refuge as a result of war or natural disaster in their homeland. The only examples of this in Yemen are Palestinians. They live in the country, enjoying the same rights as Yemeni nationals; that is, they are treated as Yemeni citizens rather than as refugees.

2. Refugees and environmental health

Regarding the subject of refugees and environmental health, in Yemen it is understood that refugee problems exist not only in the strictly speaking environmental sense; they also concern safety, peace of mind and other psychological factors. In ensuring their protection and standard of living, certain basic needs and priorities must be attended to, as follows:

(1) They must be provided with suitable shelter; very often this consists of tents, issued at the rate of one per family. They also usually need blankets and clothing as protection against harsh weather conditions.
(2) They must be provided with easily accessible, safe water.
(3) Proper disposal of wastewater must be ensured.
(4) An adequate system of waste disposal must be arranged. This includes human excreta (with provision of latrines) and garbage (with provision of suitable containers). Measures must be taken against multiplication of microorganisms caused by improperly dealt with waste.
(5) Insect and rodent infestation must be combated by proper use of appropriate pesticides.
(6) Precautions must be installed against accidents including fire.
(7) Overcrowdedness must be avoided, to combat spread of communicable diseases.
(8) Refugees must receive health education, especially about personal hygiene and food preparation.
(9) Periodic health checks are necessary, with both preventive and curative care provided.
(10) If refugees stay in settlements is prolonged, (a) education for children and possible literacy classes for adults must be given; and (b) skills and abilities of refugees should be developed to enable them to engage in income-generating activities.

Finally, it must be stressed that, in order to provide and maintain a healthy environment for refugees, two basic measures are essential:

(a) National capacity to react promptly and correctly to refugee and refugee-like situations must be built up.
(b) Refugees must be educated, starting as soon as possible after their arrival, and through all available media, about environmental health.

ANNEXES

Annex 1
Agenda

1. Opening of the Workshop
2. Introduction of participants
3. Election of officers
4. Adoption of Agenda
5. Introduction of working procedures by the Secretariat
6. WHO Global Programme towards health aspects of refugee movements
7. General features of refugee problems
8. Health aspects of refugees, displaced persons and related emergencies
9. Refugees in the Eastern Mediterranean Region; EMRO's role in health aspects and coordination with other international relief agencies
10. Environmental health management in refugee camps
11. Health management problems in refugee camps in Pakistan
12. Approaches to environmental health management in refugee camps
13. Environmental health management in refugee camps - the UNHCR experience
14. Environmental health management in refugee camps - the UNRWA experience
15. Development of national capability in environmental health management in refugee areas
16. Environmental health guidelines for refugee situation
17. Films
18. Training and information exchange on environmental health management in refugee areas
19. Slides and video films
20. Presentation of country reports/case studies
21. Formulation of recommendations
22. Field visit
23. Discussions of the draft report on environmental health management in refugee areas
24. Adoption of conclusions and recommendations
25. Closing session

Annex 2
List of Participants

Islamic Republic of Iran

Engineer Hassan Salmanmanesh
Director-General of Environmental Health
General Department of Environmental Health
Ministry of Health and Medical Education
Teheran

Engineer Mohammad Hassan Gheitassi
Expert, Sanitary Installation and Maintenance Centre of Environmental Health
Khorassan Province, Sanabad Avenue
Mashhad

Engineer Dr Manouchehr Alaie
Department of Environmental Health
Ministry of Health and Medical Education
Teheran

Jordan

Mr Hussain Mustafa Al Khandak
Head, Environmental Monitoring Section
Department of Environmental Health
Ministry of Health
Amman

Dr Sami Abdel Rahman Dlaimi
Department of Environmental Health
Ministry of Health
Amman

Lebanon

Mr Abdallah Baltagi
Head, Project Planning Department
Ministry of Health and Social Affairs
Beirut

Mr Souhail Abdul Massih Massouh
Public Health Engineer for Mount Lebanon
Ministry of Health and Social Affairs
Department of Environmental Health
Beirut

Pakistan

Mr Gulzar Khan
Commissioner, Afghan Refugees
Peshawar

Dr Hakim Khan
Project Director, Health Afghan Refugees
North-West Frontier Province
Peshawar

Annex 3

Message from

His Excellency Mian Mohammed Nawaz Sharif
The Prime Minister

It gives me great pleasure to greet the participants of the Regional Workshop on Environmental Health Management in Refugee Areas. Pakistan deems it an honour to host this gathering, which serves to underline that today Pakistan provides haven to the single largest case-load of refugees in the world. It also bears testimony to the fact that, despite financial constraints and resource limitations, Pakistan and its people have extended, in the true spirit of Islamic brotherhood, fraternal hospitality to millions of Afghan refugees, providing them with every care and sustenance, with particular attention to environmental health management. It is because of the special attention that has been paid to this important aspect that there has been no epidemic nor any major incidence of disease in the refugee-populated areas.

The theme of this Workshop is indeed of paramount importance. It focuses due attention upon the fundamental right of refugees to a clean environment and sanitary surroundings. It is not sufficient that these considerations be merely acknowledged; it is incumbent upon the international community to take appropriate measures to ensure their provision.

It gives me added pleasure and satisfaction to note that eminent delegates from eight countries of WHO's Eastern Mediterranean Region and others from many international organizations have consented to share their experience and expertise on this subject of vital importance for refugees. I am confident that the participants in this Workshop will comprehensively address all identified problems and suggest effective solutions to ensure better living conditions for our unfortunate fellow men and women who, tragically, have been subjected to the misery of forced dislocation from their homes and hearths.

In welcoming the distinguished delegates to Pakistan, I would like to wish them an enjoyable and fruitful stay, and every success in their deliberations during the Workshop.

Annex 4

Welcoming Address from

Mr Dil Jan Khan,
Secretary, States and Frontier Regions Division
Government of Pakistan, Islamabad

Honourable Chief Guest Brigadier (Retd) Amir Gulistan Janjua, Governor, North-West Frontier Province.

Dr M.I. Sheikh, Director Environmental Health, WHO Regional Office for the Eastern Mediterranean EMRO.

Distinguished Delegates
Participants,
Ladies and Gentlemen,
Assalam alaikum,

It is a matter of great pleasure and a singular honour for me to welcome you to the Regional Workshop on Environmental Health Management in Refugee Areas. I would like to express my sincerest gratitude to the Prime Minister of Pakistan for his kind patronage and very keen interest in holding this workshop. I am also particularly grateful to the Governor, North-West Frontier Province, for sparing time from his very busy schedule to grace this occasion. His presence is a source of immense inspiration and encouragement for all the participants.

Environmental health and sanitation constitute very important elements in the promotion of health and prevention and control of diseases. Viewed in the refugee perspective, the importance increases manifold. For Pakistan, being host to the single largest case-load of refugees in the world, the holding of this Workshop is of great significance.

This Workshop provides a very useful forum, bringing together a galaxy of experts of international repute, who have practically managed and analysed the problems of environmental health in a variety of situations, extending over very large areas. The Workshop has provided an ideal opportunity for sharing the experience and knowledge gained internationally in this vital field and tailoring the same to our national requirements. Useful data and information collected during this Workshop will be of use to all the participants, especially those from Pakistan who will be immensely benefitted.

WHO's call for "Health for All by the Year 2000" and the Alma Ata Declaration of 1978 on Primary Health Care led to the observance of the nineteen-eighties as the "International Water Supply and Sanitation Decade". During this period the philosophy of Environmental Health and Sanitation was translated into practical terms in national health policies of the Member States of the United Nations, especially the developing countries, and in refugee health programmes all over the world. Now is the time to analyse the work carried out in this respect over the past decade. This Workshop has provided an ideal opportunity to take stock of

the situation, and to make an assessment of what has been achieved, to narrow down and ultimately eliminate the gap between objectives and achievements. Considering the challenging nature of the problems in the management of environmental health, a flexible but dynamic approach is required. There is constant need for review and "revamping" of policies. Such workshops need to be held more frequently, as they provide valuable opportunities for free and frank discussion of the problems and the generation of new ideas. It was precisely with this in mind that the Government of Pakistan, in collaboration with the World Health Organization, decided to hold the present Workshop.

I am sure that it will go a long way toward accomplishing the objectives of environmental health management globally, especially in the context of refugee areas and settlements.

Let me once again welcome you all to this very important forum.

Thank you.

Annex 5

In the name of God, the Compassionate, the Merciful

Message from

Dr Hussein A. Gezairy
Regional Director
WHO Eastern Mediterranean Region

Your Excellency, Distinguished Participants, Ladies and Gentlemen, dear Colleagues.

It gives me pleasure to send this message to all of you who are gathered here today for the Regional Workshop on Environmental Health Management in Refugee Areas. I should like to express my sincere appreciation to the Government of Pakistan for agreeing to host this event in this beautiful city of Peshawar. I am also grateful to the Ministry of States and Frontier Regions, the Ministry of Health and the Commissionerate for Afghan Refugees for making excellent arrangements for the Workshop.

The Government of Pakistan's interest in the endeavours of WHO's Eastern Mediterranean Regional Office, and in the development of joint collaborative activities in Pakistan, is commendable. The fact that this regional event is being held in Peshawar is further proof of the already well-known concern of the Government of Pakistan regarding the refugee situation, particularly the efforts made for the improvement of the living conditions of, and the provision of health services to, all refugee populations, using the primary health care approach.

Several countries of the Eastern Mediterranean Region are currently, or have recently been, involved in refugee or refugee-like situations. It is estimated that there are more than eight million refugees in the countries of the Region. In some of the Member States, the living conditions and health care services in refugee camps are appalling, necessitating urgent interventions for improvement in environmental health services.

An influx of refugees can impair environmental conditions; the ensuing disruption of the environmental balance can have serious consequences for the health and well-being not only of the refugees themselves, but also of the inhabitants of the host areas.

Refugee settlements in the countries in the Eastern Mediterranean Region have different patterns; quite often there are serious deficiencies regarding environmental health conditions. If such conditions are ameliorated, mainly through improvements in shelter, water supply, waste disposal and vector control, the quality of life and health status of the refugee populations can be greatly enhanced.

As you are aware, the World Health Organization is deeply committed, at global, regional and country levels, to raising awareness and supporting interventions aimed at enhancing national capabilities to cope with the health aspects of emergencies and refugee situations. The Organization maintains an effective and dynamic mechanism of coordination and cooperation with both the Office of the United Nations High Commissioner for Refugees (UNHCR) and the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) in a wide range of health-related activities.

The available information shows that many national agencies in the Eastern Mediterranean Region are interested in developing their capabilities and in setting up institutional procedures for effective action in the management of environmental health. Areas of interest include, mainly, training and human resource development, preparation of national guidelines, information exchange and overall development of national capabilities in dealing with environmental health issues in refugee or refugee-like situations. This applies to the health sector, and water supply and sanitation agencies, as well as institutions responsible for environmental protection, relief aid and rehabilitation of refugees.

Having this in mind, WHO organized this Workshop so as to provide a forum for the exchange of experience and information on technical and managerial aspects of environmental health management in refugee areas. The event is expected to lead to an exchange of views and discussion of selected topics related to environmental health problems in refugee areas, national intersectoral coordination, external support in emergencies, development of national capabilities and dissemination of information.

This Workshop should be seen as part of a process to expand even further WHO's assistance in health-related matters to countries dealing with refugee problems. The outcome of your discussions will surely provide elements for the Organization's further action in support of national initiatives related to environmental health management in refugee areas.

I should like to thank your governments and international agencies for enabling you to attend and participate in this Workshop, and I sincerely hope that you will all benefit greatly from this activity.

I wish you every success in your Workshop and a very pleasant stay in Pakistan.

Annex 6

In the name of God, the Compassionate, the Merciful

Address by

Dr M.I. Sheikh
Director, Environmental Health Programme
WHO Eastern Mediterranean Region

Mr Chairman, Distinguished Participants, Ladies and Gentlemen, Dear Colleagues,

The refugee problem is one of the greatest human tragedies the world has witnessed in recent times. It is a man-made disaster, to which many countries of the Eastern Mediterranean Region are prone; it can impair environmental conditions by sudden changes in air and water quality, as well as cause soil pollution. The destruction of environmental balance can have very serious consequences for the health and well-being of refugees and host populations alike.

Massive movement of displaced persons or influxes of refugees can create emergency situations for which the countries involved are not often prepared and are therefore unable to cope with the situation or provide, on a large scale, for environmental health management in refugee areas.

The Eastern Mediterranean Region has been, and still is, particularly subject to such occurrences; at present it has more than eight million refugees. The severity of the situation is further compounded by the fact that camps and settlements vary widely in environmental measures and the corrective measures needed. It is essential to study such situations in depth to bring about the changes, across the spectrum of environmental health, that will secure improvement in refugees' quality of life.

Regarding environmental health management in emergencies, the information available shows that, although many national agencies expressed interested in the subject, in several countries of the Eastern Mediterranean Region very little is being done to prepare staff or to set up institutional procedures for action in emergency situations. This applies to the health sector, water supply and sanitation agencies and institutions responsible for environmental protection and pollution control. The staff of the national agencies of Islamic Republic of Iran, Iraq, Jordan, Pakistan, Somalia, Sudan and Yemen need wider support from the international community for activities related to emergency preparedness in environmental health aspects, mainly in connection with education, training, preparation of national guidelines and information exchange.

Many efforts are being made by WHO at global, regional and country levels to raise awareness and to enhance national capabilities in emergency preparedness aspects, mainly those directly related to health. It is the intention of the Organization to continue to expand such activities as recommended by its governing bodies and environmental health is among the areas meriting special attention.

A regional committee on emergency preparedness has been established in EMRO and environmental health management during emergencies will be one of the major assignments for its task force.

The present Workshop will be instrumental in raising awareness, attracting more attention to preparedness aspects and stimulating interventions to cope efficiently with the environmental health problems that can be generated by disasters and emergencies. The Workshop will focus on topics related to refugee problems, dealing specifically with environmental health management in refugee areas.

It has the following objectives:

(1) to raise awareness of the importance of emergency preparedness and its relationship with environmental health aspects;
(2) to bring about exchange of experience and information on technical and managerial aspects of environmental health management in emergencies;
(3) to provide forum for discussion of policies and strategies for development of national capabilities in environmental health management in emergencies;
(4) to provide an opportunity for exchange of information on approaches for environmental health management in refugee and refugee-like situations;
(5) to review aspects of intersectoral coordination and external support for environmental health interventions in emergencies;
(6) to identify areas for action to enhance preparedness for environmental health management in emergencies; and
(7) to provide inputs for the establishment of a regional programme of environmental health management for the Eastern Mediterranean Region.

It is expected that this event will trigger the planning and implementation of other activities at both regional and country levels aiming at the development of national capabilities for emergency preparedness and disaster relief in areas related to environmental health.

In the light of the conclusions and recommendations of the Workshop the WHO Regional Office for the Eastern Mediterranean Region will develop a follow-up plan for a programme on environmental health management in emergencies.

I wish you every success in this Workshop and hope that it will provide a very valuable forum for the exchange of experience and information on environmental health management in refugee areas.

ISBN 92-9021-185-7

Price: US$ 9.-