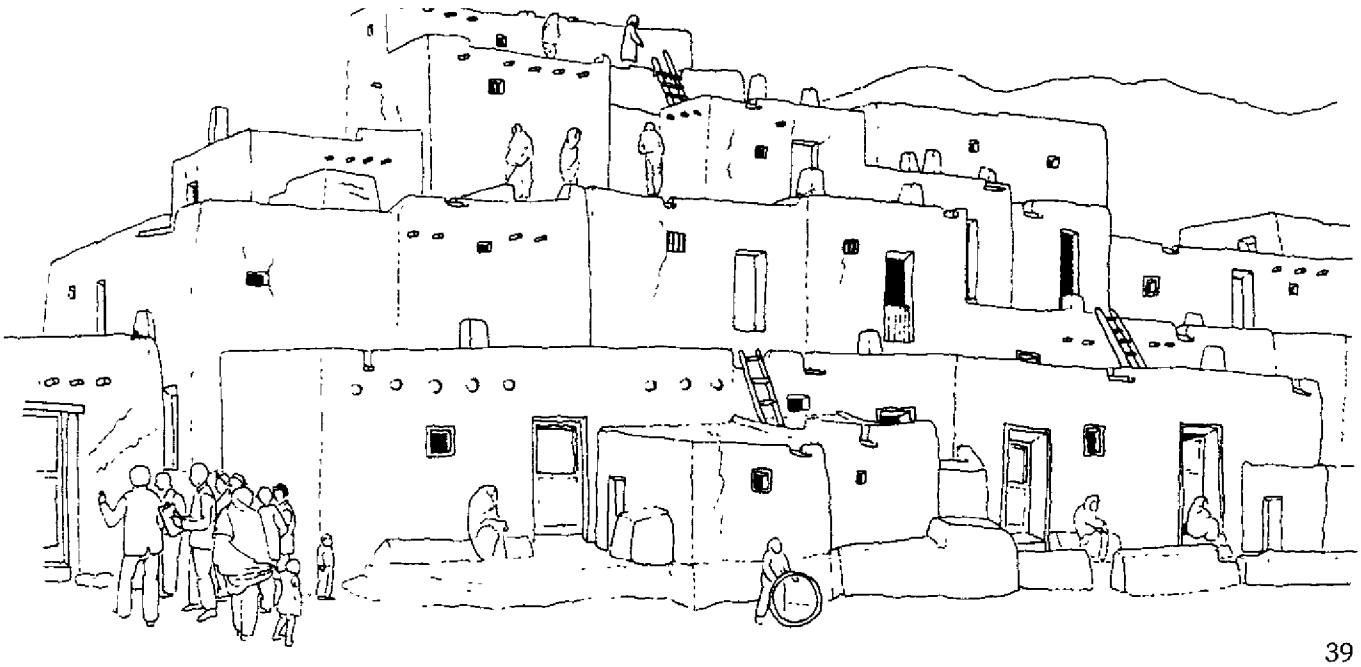
PART III

Preventing and alleviating the consequences of disasters

Part III suggests a number of activities that the community and local health personnel can undertake in order to be ready to deal with disaster situations. The national disaster plan, if one exists, will also define the tasks of the communities and the local health personnel. In this case the activities are indicated in the plan.

If a community needs assistance to carry out disaster-preparedness activities, it may contact:

- the Government (the ministry responsible for civil protection),
- international cooperation agencies (through the ministry of foreign affairs and cooperation),
- the WHO office in the country concerned.



Chapter 5

Action by the community

Analysis of past experience

If the area has already been the scene of disasters, any activity concerned with the disaster-preparedness of the community and the local health personnel must take analysis of past experience as its point of departure. Questions should be asked such as the following.

- What caused the victims and the damage?
- What were the main difficulties in the relief work?
- What were the problems in the subsequent hours and days?
- Would it have been possible to foresee the disaster?
- What preparedness would have limited the number of victims and the damage?
- What errors were made which must not be repeated?
- What actions did the most good?

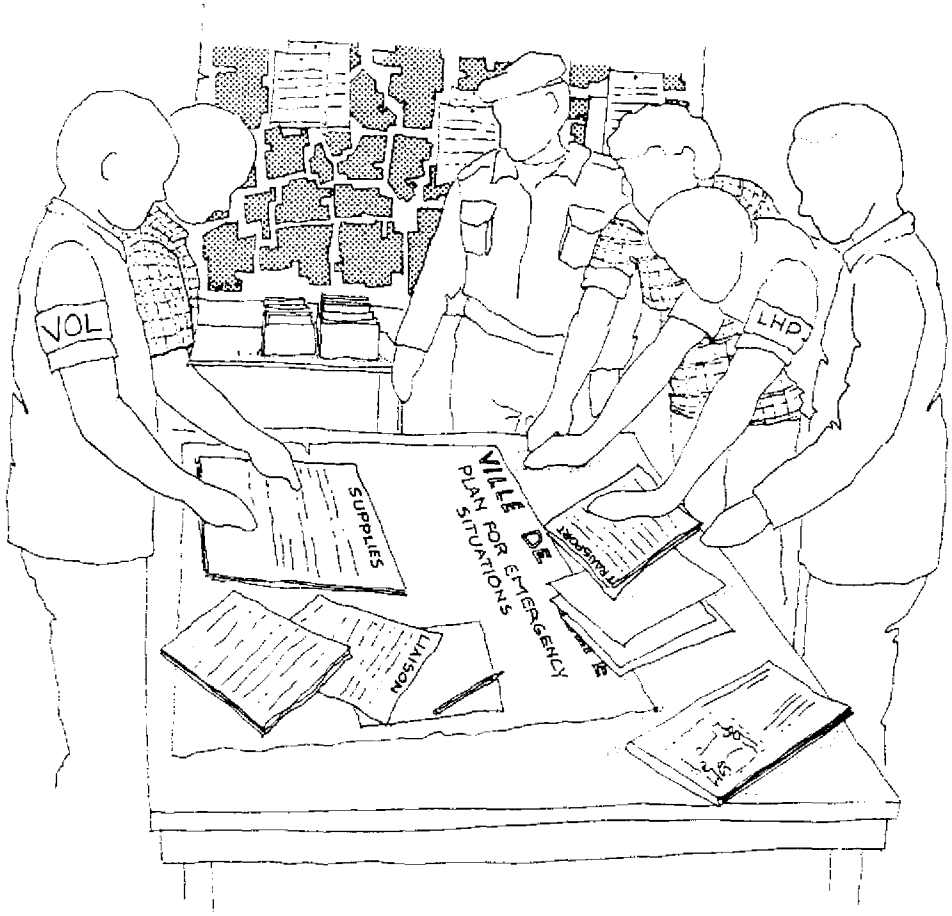
As concerns the local health personnel in particular, it may be asked, for example:

- What types of emergency case occurred and what was it possible to do for them?
- What problems were encountered in the reception of the injured?
- What supplies were lacking?
- What difficulties arose in sending the injured to properly equipped hospitals?
- Would it have been possible to obtain better cooperation from the volunteers?
- What were the difficulties of coordination with the authorities and the other community groups?
- How would it have been possible to obtain more effective outside assistance?
- What health problems arose after the disaster and what were the difficulties in coping with them?

Information on disasters

Information is the basis for preparing the community and the local health personnel for emergency situations. Consideration must be given to:

- selecting the types of information content that should be disseminated to attain the degree of preparedness wished for.
- the sources of the information,
- the best means of reaching the intended recipients, capturing their attention and obtaining their participation



Five essential features can be envisaged to which it is possible to relate the main types of information that will be useful locally if a disaster occurs:

- Knowledge of the envisaged danger. It is a matter of supplying, in the simplest and clearest manner possible, information on the causes and dynamics of the type of disaster that may occur in the area.
- Forecasting the disaster and giving warning of it. Where possible, indications must be given of the means of forecasting the moment at which disaster may strike and of the warning systems used.
- Prevention and alleviation of the consequences. The means must be indicated by which the risks to survival and health in the envisaged disaster can be prevented or alleviated.
- The emergency. The acts and behaviour that are essential for saving lives and reducing risks when the envisaged disaster strikes must be indicated.[1]
- The actions to be taken in the hours that follow the disaster. Indications must be given of the types of behaviour best adapted to the situation that will arise after the envisaged disaster takes place and the points of reference that must be used in organizing relief, survival and the management of the various problems.

[1] See, for example, Annex 4.

Two types of information source must be envisaged:

A. Documentary sources. Among these must be classified

- First and foremost the official documents prepared by the national, regional or local authorities — generally laws on civil protection, circulars, emergency plans, safety regulations to cover different types of risk (fire, electricity, gas, built-up areas, land occupancy, communities, etc.). These documents can be obtained from the authorities and distributed
- Then come books, journals and other publications dealing with the various aspects of prevention and action in the event of disasters. A list is given in Annex 12 It is valuable for the local health personnel, depending on the local risks and previous initiatives, to have access to publications which will help them tackle the subject in the most up-to-date and rigorously correct way
- Finally, films and audiovisual material which can be useful not only in the internal task of ensuring the preparedness of the local health personnel but also for information and discussion with the various members of the community It will thus be possible to use commercial films or State and private television programmes dealing with disasters.

B. Direct sources. Those available on the spot include

- Eye-witness accounts, photographs, recordings and any other contributions coming directly from persons who have lived through a disaster. Analysis and discussion of first-hand experience of both disaster victims and relief workers (and, of course, the local health personnel) are indispensable.
- Contributions from all those who can help define the content of the information available. local authorities, local health workers, teachers of geography, the natural sciences, physics, chemistry and other subjects in the schools, public utility personnel (electricity, gas, water, town and country planning, transport, communications, etc.) and safety personnel. Where they are available, use should be made of contributions from experts and specialists in geology, economics, sociology, town planning and architecture as well as, naturally, specialists in various branches of public health and in the subjects most directly connected with disasters, such as vulcanologists, meteorologists and seismologists, and experts from bodies and associations that intervene in the case of disasters

Every culture has its preferred methods for circulating information. Some of the methods that can be used are listed in Table I.

Some information on natural disasters

Earthquakes result from continuous geological transformations in our planet. According to the latest theories, the tectonic plates of which the world's surface consists are in constant movement. It is near the sites of friction between these plates that earthquakes occur.

A particularly dangerous phenomenon is the *tsunami (maremoto)*, a great wave as much as several metres high which crashes down on the coasts as the result of an earthquake on the ocean bed Sometimes it engulfs people who have fled towards the beaches. A *tsunami* may cross the ocean and crash down on to beaches thousands of kilometres away.

Table I. Media for information and communication at local level[1]

- arrangements for listening to national radio or television broadcasts
- local broadcasting, news film, radio forum or newspaper column
- newspapers, weekly magazines
- audiovisual media. photographs, transparencies, audiotapes, audiocassettes, 8-mm films, videocassettes documentary films
- exhibits and displays, information racks, travelling exhibits, wall posters, designs
- speeches, letters to the newspapers, questions raised in the local political assembly, community discussion groups
- internal communications to administrators and employees in disaster-related jobs (circulars, bulletin boards, publications)
- leaflets, books, manuals, strip cartoons
- wall-sheets, posters, wall-newspapers
- inserts and enclosures in other forms of communication, such as magazines, newspapers, books
- meetings, seminars, conferences, working groups
- eye-witness accounts, discussions in schools, vocational training centres, clubs, public places
- telephone answering service with recorded messages
- public address systems
- special events: disaster simulations, exchanges of visits between communities on aspects of prevention, visiting days at early warning centres, civil protection centres, seismological observatories, dams, etc
- folk media: story-telling, dance, song, poetry, puppet shows, music, street entertainment, posters

[1] Adapted from. Office of the United Nations Disaster Relief Coordinator, Geneva. *Disaster prevention and mitigation. a compendium of current knowledge. Vol. 10, Information aspects* New York, United Nations, 1979.

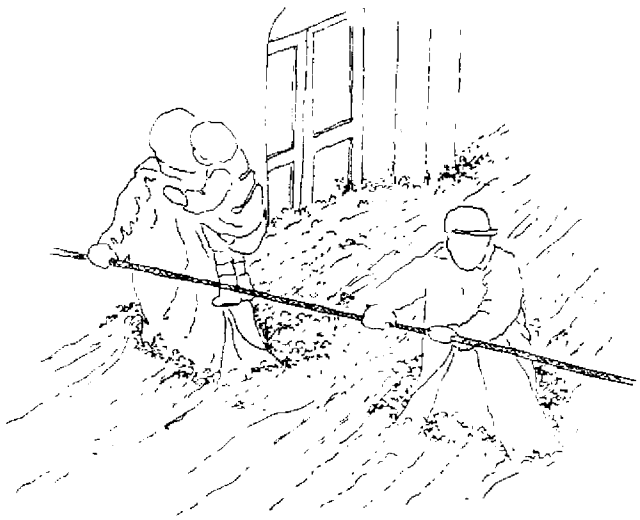
The effects of earthquakes are simply and effectively epitomized in scales of intensity [1]

It is very difficult to foretell the date and intensity of an earthquake but a few recent successes in that regard provide some hope.[2] At the present time, however, no reliable and generally accepted method of forecasting is available. An earthquake takes place after gradual accumulation of energy connected with subterranean stresses accompanied by important geological changes that may be noted over a period of a few weeks, months or even years before the actual quake. Some phenomena can be observed by the public:

- The water level in wells is subject to sudden fluctuations and there are variations in the temperature, level and turbidity of deep underground water.
- Premonitory shocks *(foreshocks)* may precede the main shock by anything from a few minutes to hundreds of days

[1] See Annex 5.

[2] On 4 February 1975 at Haicheng in China 400 000 people were successfully evacuated 5½ hours before shocks of magnitude 7.3 on the Richter scale destroyed 90% of the dwellings In May 1977 in Yunnan Province, China, two earthquakes of magnitude 7.6 and 7 5 respectively were predicted, enabling the alarm to be given 8 minutes before the first shock.



Other premonitory signs can be detected by means of scientific instruments.

Among disasters, floods are by far the most serious in terms of human lives and property. Plains liable to flooding always attract settlement: ease of tillage, water supply, transport and waste disposal. It is because of the concentration of the population on alluvial plains that floods are one of the most deadly natural phenomena. The Yangtse floods of 1931 killed over 3 million people by drowning or famine. WHO was called upon more recently still — in 1982 — to intervene in the same region. The causes of floods are:

- rises in stream levels resulting from abundant rainfall or the melting of the snows,
- ice barrages (the piling-up of large masses of ice coming from upstream) that cause stream levels to rise, and the sudden break-up of the masses of ice, which is responsible for flood waves,
- flash floods caused by intense rainfall and sometimes tornadoes,
- tidal bores,
- storm waves, caused by a combination of lunar tides and very high winds

Hydrologists and meteorologists can forecast floods with a high degree of accuracy. In every zone exposed to flood risks it is possible to know in general terms the time of year, frequency, rate of flow, duration and depth of a rise in the water level. More specifically a flood can be predicted from a few hours to a few weeks in advance. Various methods of observation make it possible to give warning in various ways: radio, television, newspapers, telephone messages, megaphones, sirens, flags Continuity of information and keeping the public in areas at risk constantly aware of the danger are very important.

Volcanic activity may range from fumaroles or moderate lava flows up to violent explosions which project various types of material to a great height. The nature of the activity depends on the viscosity of the magma (molten rock) which reaches the surface and on the volume of gases involved:

- *Streams of lava* vary greatly in volume, spread, thickness and speed of progression. Their path depends on the topography; while they are very impressive, they represent very little risk
- *Explosions of volcanic domes* eject volcanic materials: volcanic bombs, blocks, lapilli, ash and scoria
- *Ignimbrite flows*, consisting of a mixture of lava, ash and gas, form a cloud that moves at ground level at great speed.
- *Nuées ardentes or hot avalanches:* mixtures of volcanic materials and gases hurtle down the slopes at over 100 km/h A *nuée ardente* killed some 30 000 people at Saint-Pierre in Martinique during the eruption of Mont Pelée
- *Mud streams*, a mixture of debris and water, arising, for example, from the sudden melting of glaciers (23 000 dead in Colombia in 1985) or bursting of the banks of artificial lakes in the crater, flow down the slopes at speeds of up to 100 km/h and may cover stretches of hundreds of kilometres: they are very deadly
- *Clouds of volcanic gases*, (sulfuric, carbonic or fluoric acid) may contaminate water and crops, inflict burns and suffocate human beings and animals.

Volcanic eruptions leave a trail of destruction and death on the path of lava and mud streams and *nuées ardentes* and in areas on which volcanic matter falls Fires break out; roofs collapse under the weight of the ash; water and plants are contaminated. Sometimes eruptions are preceded or accompanied by earthquakes.

To envisage the type and intensity of a future eruption, the best approach is to proceed by analogy with previous eruptions of the same volcano. A map of the volcano may make it possible to predict the paths of lava flows. The previous periodicity of the eruptions of a volcano, if any, can serve as a very general guide for predicting a new eruption. Some eruptions are preceded by changes in behaviour of the fumaroles or hot springs on the mountain: the appearance of new features, an increase in temperature, changes in the composition of the gases. In other cases there are magnetic changes before an eruption. Some agitation can often be seen among animals. Scientific monitoring of the deformations (upswellings) of the ground and the shocks that accompany volcanic activity is very important. By combining these observations the specialist can predict eruptions, sometimes with astonishing accuracy (the eruption of Mauna Loa in Hawaii in 1942).

Tropical cyclones or hurricanes show a regular seasonal tendency. Every year they claim numerous victims and cause great damage. For example, in November 1970 a cyclone laid waste Eastern Pakistan (now Bangladesh), with a death toll of over 300 000. Cyclones originate over the sea in the tropics, particularly towards the end of summer. A cyclone has a central zone, its 'eye', with a diameter varying from 20 to 150 km. Around this calm centre the violent winds move clockwise in the southern hemisphere and anticlockwise in the northern.

The winds generated and accelerated by the difference in pressure between the centre and the periphery may blow at up to 300 km/h. The destructive power of cyclones is due to the force of the winds, to the intense and prolonged rainfall, which may also cause watercourses to flood, and to the tidal waves driven along by the winds to hurl themselves on to the coasts. Cyclones move westwards and die out when they reach land or colder sea surfaces.

Cyclone detection is based on weather radar, satellite data and even messages from airliners. Meteorologists can predict their intensity and path, often with a high degree of accuracy. However, allowance must be made for the possibility of error, since cyclones may follow a very irregular path. In countries liable to cyclones, warning is given by the authorities, generally in radio or television broadcasts. The warnings are followed by bulletins confirming, refining or cancelling them.

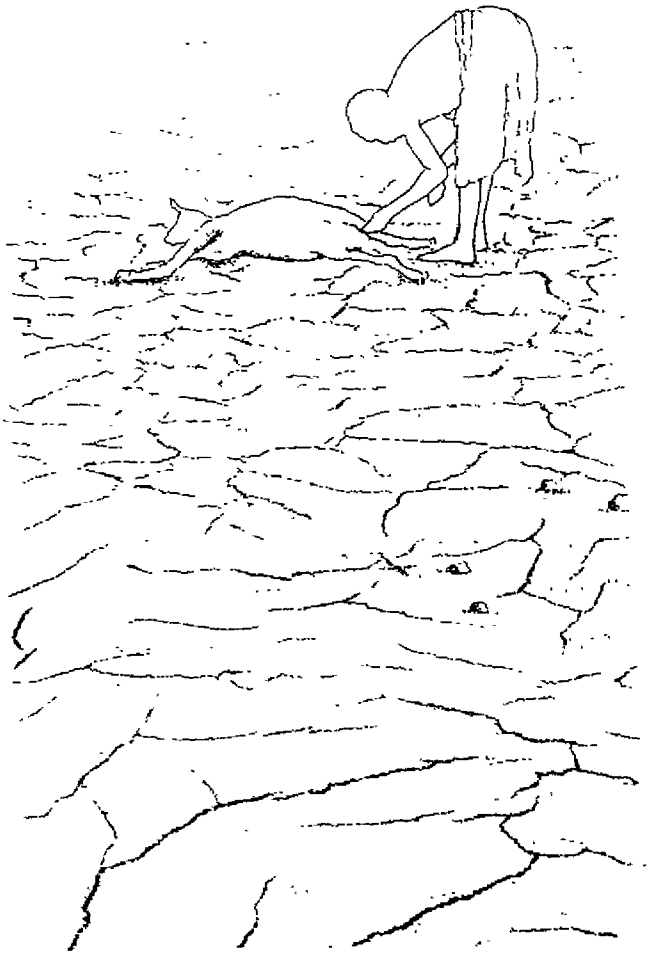
Drought and its fearsome consequences, desertification and famine, result from a combination of several factors:

- a reduction in rainfall causing a shortage of water,
- a reduction in vegetation, erosion of the soil, surface evaporation,
- an increase in human and animal populations,
- political and technological decisions at national and international levels.

In rural communities, economic factors (type of agriculture) and social elements (nomadism, semi-nomadism, drift of population towards the towns, etc.) affect the health and survival of families and moreover have an impact on the desertification process.

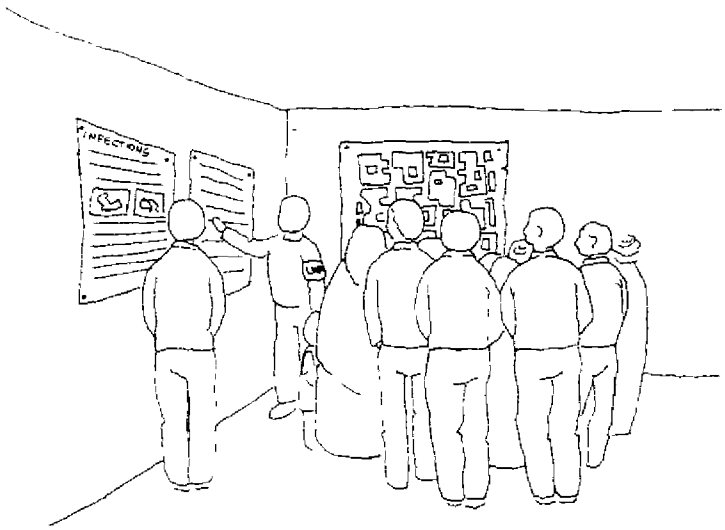
It is generally accepted that the struggle against desertification must be waged in two complementary ways: on the one hand appropriate political and technical measures must be taken at national and international level and on the other there must be a continuous process of

information, education and organization in the local communities. As part of this process the role of the local health personnel is to develop programmes of prevention and adopt methods of health action based on community participation and self-organization. Voluntary workers and the Red Cross can make an important contribution here.

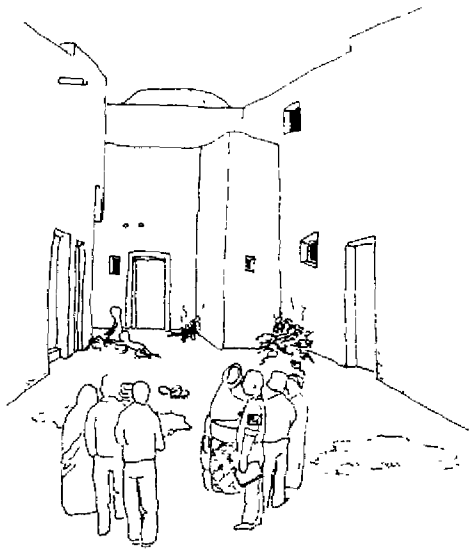


Knowledge of the risks and the resources

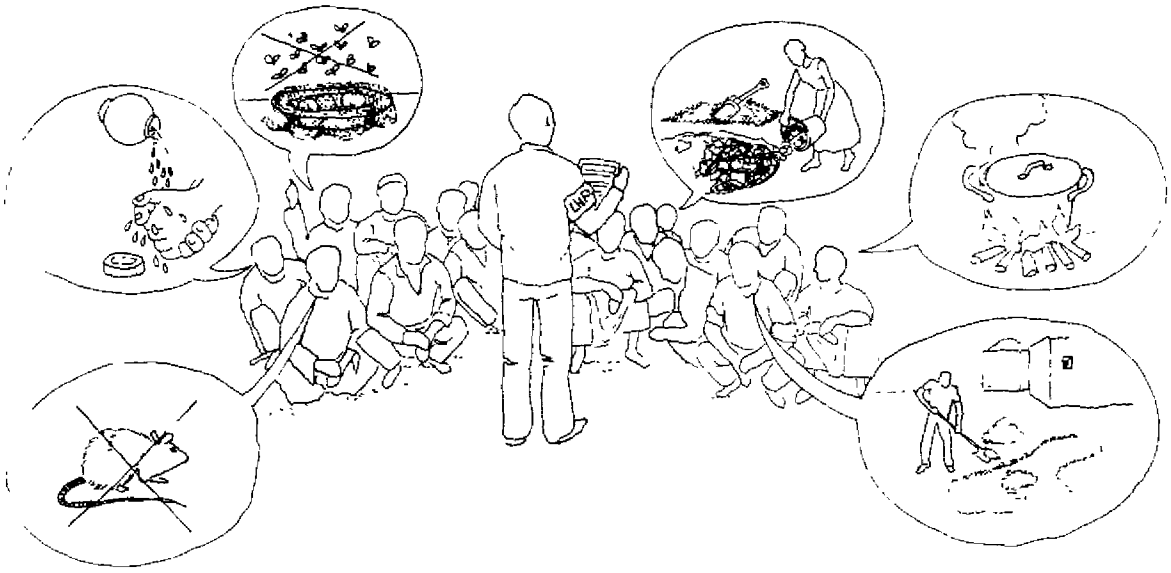
Knowledge of the risks to life and health to which the community is exposed can be acquired in various ways and to different degrees of detail. As part of national plans, local plans can be prepared by the community to deal with emergency situations. These plans can make use of special risk maps (e.g. earthquake, hydrogeological or volcanic zoning). In most cases, however, in the absence of plans, the community



A committee of families, with a local health worker, organizes neighbourhood visits.

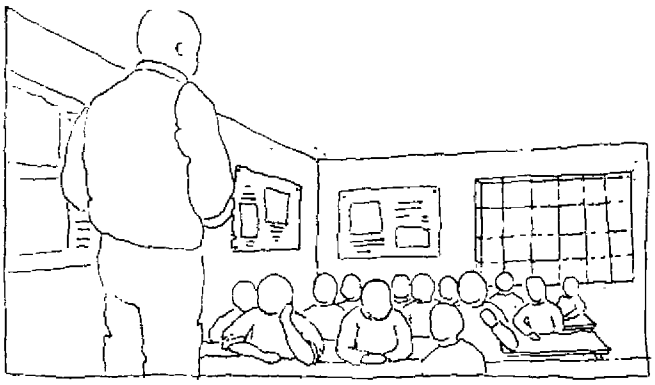


They find certain problems of hygiene

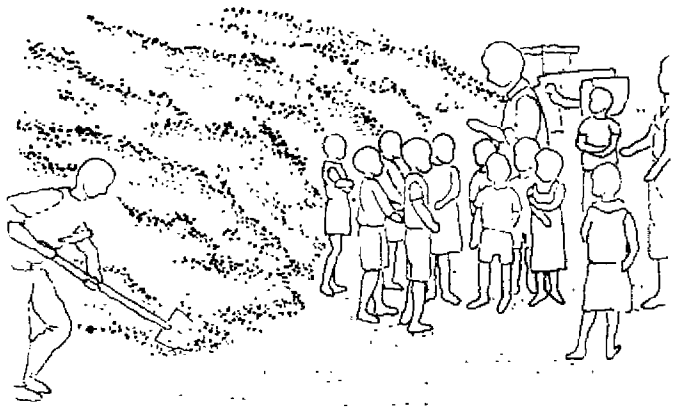


They find solutions

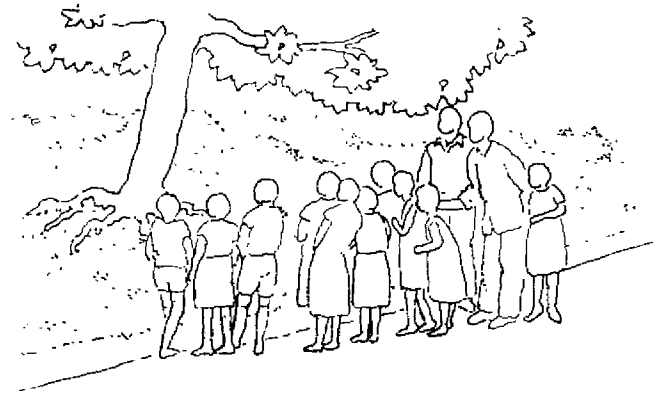
Knowledge of hazards in the neighbourhood



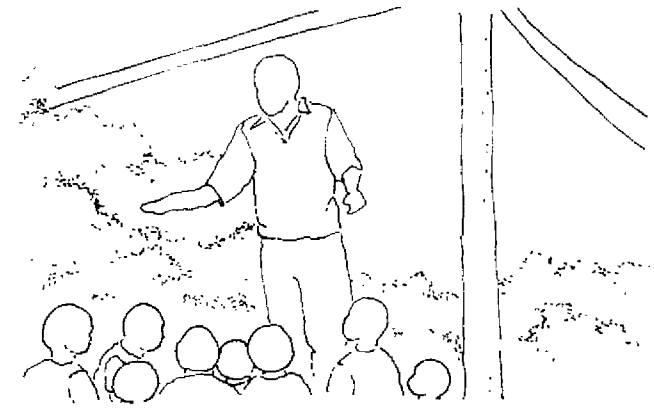
A local health worker goes into a school.
He speaks of recent experience of hurricanes and floods.



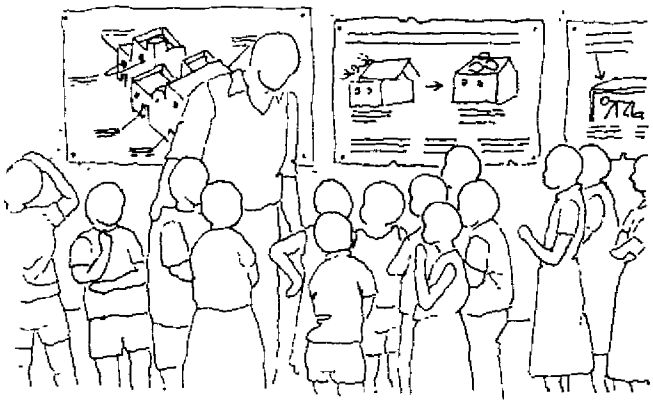
The health worker and the children go out to study particular risks.
Here, landslides. The teaching staff participate in the visit and the discussion



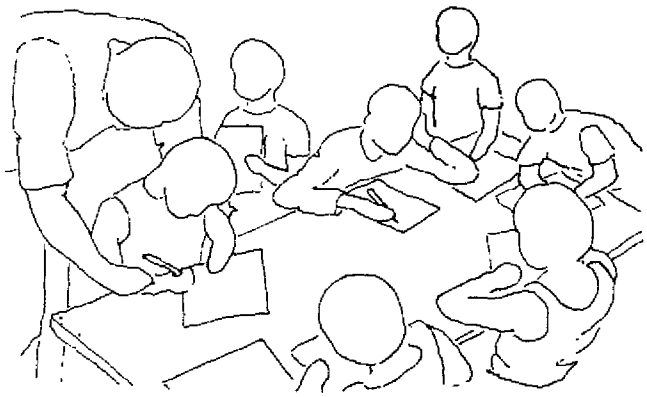
A great deal of damage is caused by falling objects and by materials dragged along by the wind It is essential to get to know and prevent such damage. Here the group studies a big tree with its roots exposed that could easily fall



Fallen high-voltage cables cause electrocutions, short circuits and fires



The visit is an opportunity to recall to attention the safety instructions in the case of cyclones and to study the parts of houses that need strengthening.



After the visit the children produce drawings on the risks studied, as their contribution to the community's risk map

Knowledge of hazards in the schools

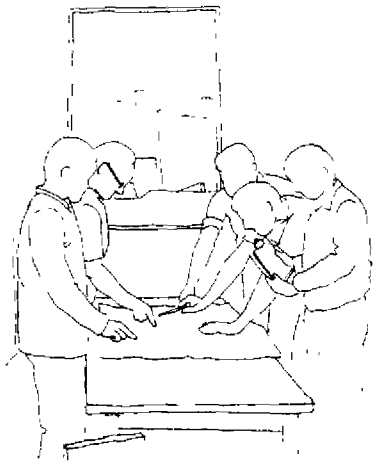
can ascertain the risks by periodically enlisting the support of various social groups. Even if this does not result in real plans, it is a valid means of preparing for emergency situations, for during these risk-ascertaining activities the problem is also tackled of what would have to be done and what resources would have to be utilized if the emergency actually arose.

Who carries out the activities?

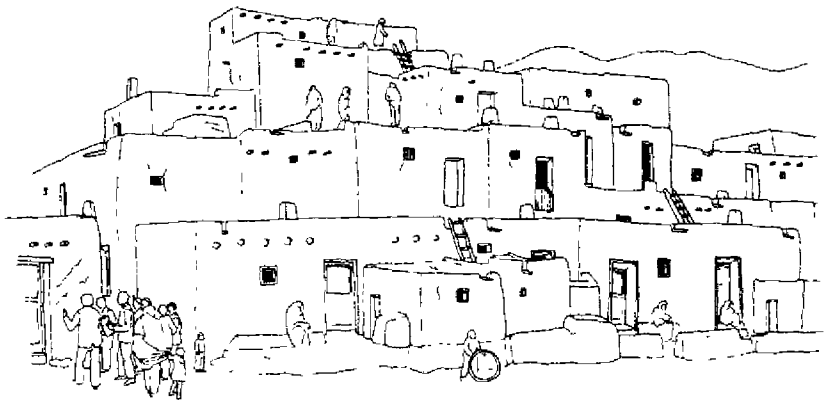
- the personnel of the public services,
- the police and fire brigade,
- first-aid associations,
- associations, professional people, organized groups in the community,
- the schools

What risks are envisaged? Each group can consider the risks with which it is most closely concerned, such as:

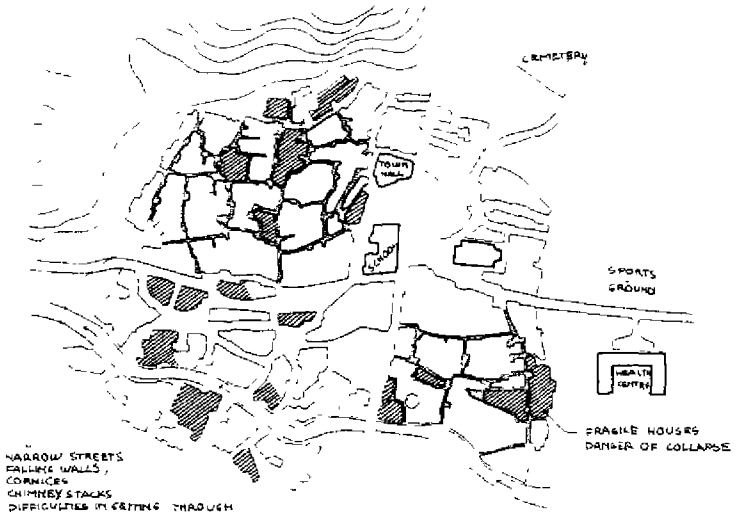
- the collapse of flimsily built buildings,
- the irruption of water in cases of floods, prolonged and heavy rainfall, tidal waves, cyclones, the failure of dams,
- fires (stocks of inflammable materials, electrical short-circuits),
- contamination of the soil, water and air by toxic products (what products?) which may spread in the event of an accident or disaster,



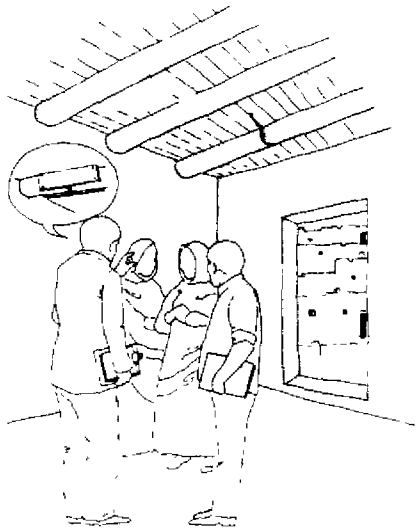
Local building experts meet.



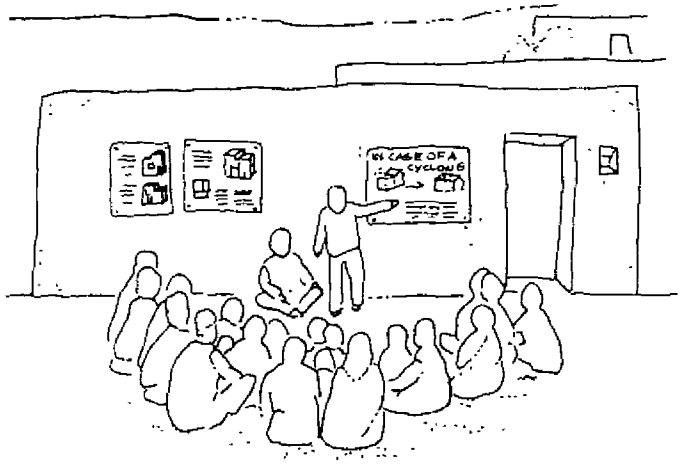
They list buildings likely to collapse.



They produce a map of risks to buildings



They indicate the solutions to be adopted in strengthening buildings.



They show how to protect houses against cyclones and earthquakes

Knowledge of risks to buildings

- explosions (stocks of gas, petrol or explosives),
- landslides (in the case of an earthquake or prolonged rainfall),
- damage from a volcanic eruption (examination of past experience),
- breakdown of communications (telephone lines, lack of electricity),
- isolation of the community because of roads becoming impassable.

The local health personnel can cooperate in ascertaining the risks, particularly by helping the groups mentioned above to recognize certain dangers already present in normal times but which a disaster may make more acute:

- utilization of contaminated water and food,
- presence of insect disease vectors and rodents,
- poor environmental hygiene (disposal of refuse, sewage, etc),
- absence of latrines,
- lack of hygiene (personal, domestic, in markets),
- harmful eating habits (meals poor in protein),
- other.

These activities to determine the risks and resources are carried out in the following stages:

- the organizing group meets and discusses the risks it wishes to concern itself with,
- visits to the sites exposed to risk and information meetings are arranged,
- the risks noted are discussed and possibly indicated on a map of the area visited (see risk maps in Annex 6),
- the resources available to the community in case of disaster are listed,
- initiatives to reduce the risks envisaged are proposed and efforts are made to put them into effect with the cooperation of other community bodies.

The figures give examples of these activities

Who coordinates the various activities? The local authority and, where one exists, the community's emergency committee coordinate the activities and gather and summarize information on risks and resources. The simplest method is to organize an "Annual Day" on which each group submits the results of the work done, there is a discussion on general preparedness for emergency situations, and the steps to be taken are considered. One or more risk and resource maps can possibly be drawn up (see Annexes 6, 7 and 8). In this framework, the local health personnel describe their preparedness activities (see below).

Evacuation of the population

When an area is under an imminent threat of disaster (flood, cyclone, tidal wave, volcanic eruption), the competent authorities may order the evacuation of the population. The community's emergency committee will be able to cooperate in the evacuation if it knows the details of how it will be carried out:

- the evacuation routes and the other routes that could be used if one or more of the planned routes became impracticable,
- the means of transport by land, water or air,
- the sites to which the evacuees can be taken and given shelter,
- arrangements to supply water, food and other necessities

In the case of evacuation the local health personnel must concern themselves with ensuring, under the best possible conditions and with

the collaboration of the families, the marshalling and transport of the sick, the disabled, the handicapped and other vulnerable persons. They will collaborate in providing the population with accurate information regarding the reasons for the evacuation and the ways in which it is to be carried out. They will help to reunite families. They will organize a health post on the site chosen for providing temporary shelter and from that post busy themselves with every aspect of managing the health problems that follow a disaster.

Twinning

The twinning of local communities for the prevention and alleviation of the consequences of a disaster is a very valuable means of assistance.[1] Twinning involves the conclusion of an agreement between communities, providing for various types of activity such as:

- collaboration, joint initiatives and exchanges for preventive activities organization of a health information network, mapping resources, training of staff, education of the population, sanitation plans, strengthening or recuperation of the building stock, study seminars, volcanic, seismic or hydrological zoning, etc ;
- determination and preparation of the resources to be sent in the event of a disaster: equipment and machines for clearing rubble, specialized personnel, health equipment and personnel, communications equipment and personnel;
- provision for means of transport and temporary accommodation in the event of evacuation;
- organization of joint exercises

The local health personnel of the twinned communities work periodically together on types of action to be taken in an emergency, for example:

- training schemes on how to behave in different types of emergency,
- equipping and preparing the local health establishment to receive a large number of injured and sick people,
- previous agreement on evacuating cases that cannot be dealt with on the spot to a properly equipped hospital,
- joint initiatives for public health action in the event of a disaster disease monitoring, sanitation, health education, rehabilitation, mental health and its community management, etc.

Twinning should be reported to and agreed by the regional and national authorities, to avoid duplications and gaps.[2] Twinnings are very important· they make it possible to prepare disaster relief plans which can be

[1] For example, following the 1980 earthquake in Italy, which took a toll of over 3000 lives in the Naples region, the assistance sent by Italian towns situated at various distances from the scene of the disaster proved in many cases speedier and more effective than other forms of assistance. In most cases teams were sent who had their own means of shelter and survival and brought with them the necessary machines, equipment or, particularly, specialized staff A few hours after the earthquake each of the local communities stricken by the disaster was twinned with an Italian town (or sometimes more than one) for immediate assistance. These twinnings in some cases lasted several months and provided very important help in the reorganization of community life and the return to normality

[2] Various criteria for twinning can be adopted. In some countries certain areas are much more liable to disasters than others In such cases towns in high-risk areas may be twinned with low-risk towns. In other cases, however, the fact of being exposed to the same dangers in two different areas may encourage the conclusion of twinning agreements. In yet other cases emotional economic, cultural or political reasons provide a basis for twinning.

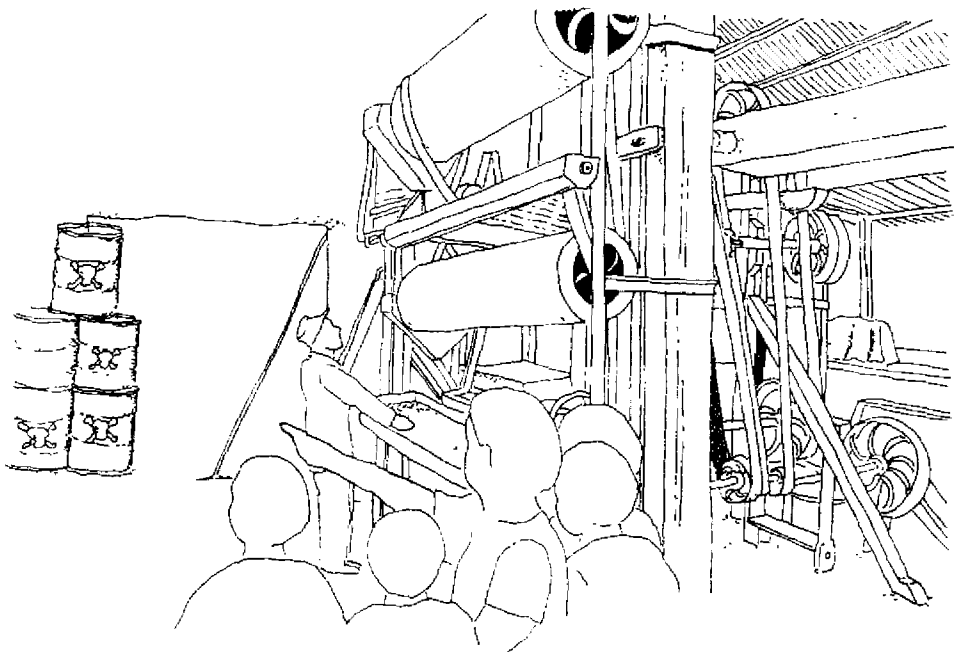
rapidly put into effect. They presuppose educational and preparedness activities that commit the two communities in a broad and systematic way; they develop a feeling of cooperation and solidarity; they encourage community actions and the assumption of responsibilities; they prevent the development of a feeling of dependence in regard to assistance, and the twinned communities often share the heavy burdens resulting from disasters.

Exercises and activities to promote community preparedness

The community's emergency committee, in collaboration with the schools, local associations (such as the local branches of the Red Cross) and community services, can organize simulation and other exercises and disaster-preparedness activities. This work should make allowance for the local culture and habits and if it is to be effective must not be of an artificial nature. Each potentially real situation must engender appropriate activities arising from discussion and the participation of the members of families from the community.

Work on ascertaining risks and resources lends itself very well to creating a series of opportunities for carrying out activities that will be useful for community life and at the same time function as exercises in disaster preparedness. Further examples of preparedness activities include:

- exercises in first aid: how to extricate, give first aid to, and transport injured persons, etc.,
- exercises in providing temporary shelter: organization of camps for temporary shelter in event of a disaster,
- sanitation exercises: installation and management of water-supply points and latrines, controlled refuse disposal, etc.,



- guided visits to volcanoes, seismological observatories, dykes, civil protection centres (fire stations, forest warden posts, etc.), factories, stores of dangerous materials, sites exposed to risk,
- dummy runs and practice alerts organized by the local authority,
- strengthening of flimsy structures in accordance with the programmes of the local administration; groups of dwellings can be strengthened with the help of voluntary workers, schoolchildren, etc ,
- flood protection (various means of ensuring that a watercourse does not overflow its banks),
- information (exhibitions of drawings, lectures, photographs, films on disaster preparedness),
- training of groups of volunteers available to help the community emergency committee in activities when a disaster strikes and afterwards.

Basic education

Experience shows that even in the absence of specific disaster-preparedness activities, the population and the staff of public services respond much better if beforehand the community develops activities and initiatives based on.

- encounters, exchanges, the expression of needs, information and communication,
- community discussion and action to gain an understanding of the causes of disasters and associated problems, plan the most appropriate measures and put them jointly into effect,
- a feeling of belonging to the community by making proper use of local cultural values, forms of social life, resources and products,
- combating the rejection or exclusion of the disabled, the mentally ill, the handicapped and other persons in difficulty,
- the development of assistance and mutual aid,
- meetings with local authorities and collective discussions to resolve community problems.

Chapter 6

Action by the local health personnel

Essential professional qualities of local health personnel for coping with disasters

In the event of a disaster, the local health personnel must immediately become an active, reassuring and organizing force to which the community can refer. They will be more effective (even if they themselves or their families have suffered in the disaster) if they have been previously trained to play this role. They will be able to contribute not only by displaying a positive psychological and emotional attitude of readiness to help and solidarity but above all by reason of their professional qualities and methods of work. Some of those qualities are particularly useful at the time of the emergency and during the days that follow.

Experience has shown what professional qualities are important in the event of a disaster. The ability to estimate requirements and resources is the essential means of avoiding bewilderment and confusion. It serves to:

- select priorities for direct action by local staff in the emergency relief work and later in the management of health problems,
- determine the real and accessible resources available in the way of personnel, premises, medicaments, equipment and materials,
- ascertain what is missing and what must be obtained as a priority from outside assistance.

The evaluation of needs and resources is not a bureaucratic process: it is effective only if it results in good mental and operational organization of the local health personnel. Evaluation must seek to establish in every instance what must be done, who should do it, in what way and by what means. Obviously it is a tool that could be validly used in normal times, since it makes it possible to give clear answers to questions of fundamental importance for the health of the population in the event of a disaster.

In the situation following a disaster, even more than in normal times, health cannot be separated from the material, social and cultural conditions obtaining in a community: versatility is precisely the ability to take into consideration all the factors that have repercussions on the health of the persons or groups receiving care. This does not mean that local health workers must know how to do everything; but it means they must know how to bring into play the other technical or community resources needed to supplement health activities, while still performing their own specific professional tasks. This is not easy, for when confronted with the practical complexity and emotional tension involved in multisectoral work, health personnel often end up by confining

themselves to repetitive tasks in their own sector, regardless of other community services.

A good knowledge of the area for which the local health personnel are responsible is essential in the event of a disaster and forms part of their professional qualifications Some aspects are of fundamental importance:

- knowledge of the risks to health,[1]
- knowledge of resources useful in normal times and above all in the event of disaster [1]

It is important in disasters to have a knowledge of several aspects of the life and moving forces of the community, for example:

- the composition of the population by age, sex and family nuclei,
- the community's institutions, services and administration,
- its social structure,
- its economic and productive activities,
- the forms of local political management, influential groups and persons, current conflicts, the influence of political factors on health,
- traditions, eating habits, the various aspects of the local culture.

Disasters often give rise to a sudden change in the strata and motive forces of society. The local health workers can expect everyone to be ready to cooperate and to show solidarity: it is knowledge of the community that will make it possible to bring about the participation and joint initiatives essential for managing health problems.

In the event of a disaster the local health personnel must become the focus for obtaining and imparting information on emergency relief, reuniting families, and evaluating needs and resources. They will be able to do this all the more effectively if they have developed and established a system for circulating and managing information on the community's health problems. Among important professional qualities must be counted the ability of the local health personnel to select useful information, put it into circulation among the community in a constructive way, and dismiss false rumours. Information and communication form the basis of an ability to develop community participation and community activities. In the event of a disaster it becomes essential to coordinate health activities with:

- rescue work and the restoration of links with the outside,
- the local authorities,
- means of information and communication,
- public utilities (electricity, water, etc),
- the social services,
- the transport services,
- the nearest health services to which the injured and sick who cannot be cared for on the spot will be evacuated,
- voluntary workers,
- outside assistance

In fact, coordination implies paying close attention to the requirements of others and an ability to direct others towards the needs one is trying to

[1] See the specific paragraph on page 48 and Annex 6

satisfy. It will succeed all the better if clear information is available and if needs and resources can be correctly assessed. Coordination is dependent on two major conditions being met:

- clarity of the objectives,
- ability to deal intelligently and constructively with the conflicts that are often unavoidable in a community.

In all health activities methods of action should be chosen that interest and move people, encourage them to assume responsibilities, entrust them with clear and simple tasks, and promote cooperation, solidarity and mutual assistance. At the outset these methods involve more intense, difficult and prolonged work for the local health personnel but they produce better and more lasting results.

Improving certain professional skills

A useful means of preparing for emergency situations is to launch training and further training activities on aspects of professional work that become particularly important in the event of a disaster. For example, national Red Cross and Red Crescent Societies organize first-aid courses designed to train volunteers who can intervene in emergencies. In these activities allowance must also be made for the situation of isolation and overload that may arise. Experts from specialized centres can help the local personnel improve their skills. Training that should be considered includes:

A. How to deal with various types of emergency
- haemorrhages,
- cardiovascular failure,
- respiratory distress,
- states of shock,
- skull injuries,
- burns,
- fractures, dislocations, sprains,
- wounds,
- exposure to cold,
- drownings,
- electrocutions,
- poisoning,
- bites from venomous snakes.

B. Development of working methods to deal with various aspects of public health:
- health information network, use of record cards, notebooks and registers, drafting reports,
- disease-monitoring system,
- action to promote mental health and deal with psychological difficulties,
- psychological and physical rehabilitation, use of prostheses,
- education for health, hygiene and a clean environment,
- control of endemic diseases (diarrhoea, tuberculosis, malaria, parasitic diseases, vaccinable diseases),
- monitoring of nutritional status, remedial diets, education on nutrition (in famine areas).

Preparation of the health centre or hospital

When a disaster occurs the health centre or hospital in the stricken area may for some time be the only health resource available. For that reason it is essential in risk areas to prepare it for the emergency that may occur.

In particular, provision must be made in the health centre or hospital for:

- premises for receiving and sorting the injured,
- a reserve stock of emergency medicaments,[1]
- a stock of medical supplies for use in emergencies (see Annex 9),
- essential medical equipment, bearing in mind the level of professional skill of the local health personnel (sterilization, minor surgery, resuscitation, etc.),
- ensuring the availability of the water, electricity, fuel and supplies needed for the health facility to function,
- means of transport (ambulances, other vehicles),
- means of communication (telephone, radio, etc).

When the local health personnel include several professionnals, a plan for emergencies must be prepared which assigns to each of them precise tasks, such as:

- coordination of reception of cases,
- screening and emergency care,
- organization of the voluntary health workers in the health facility,
- organization of the voluntary health workers in the community,
- supplies,
- communications.

The local hospital may suffer serious damage in a disaster To deal with that possibility, a plan[2] must be available which makes provision for:

- the tasks and responsibilities of the staff,
- instructions for using the disaster warning systems,
- explanation of firefighting techniques and the points at which extinguishing equipment is kept,
- ways and means of evacuating hospitalized patients,
- periodic exercises and dummy runs

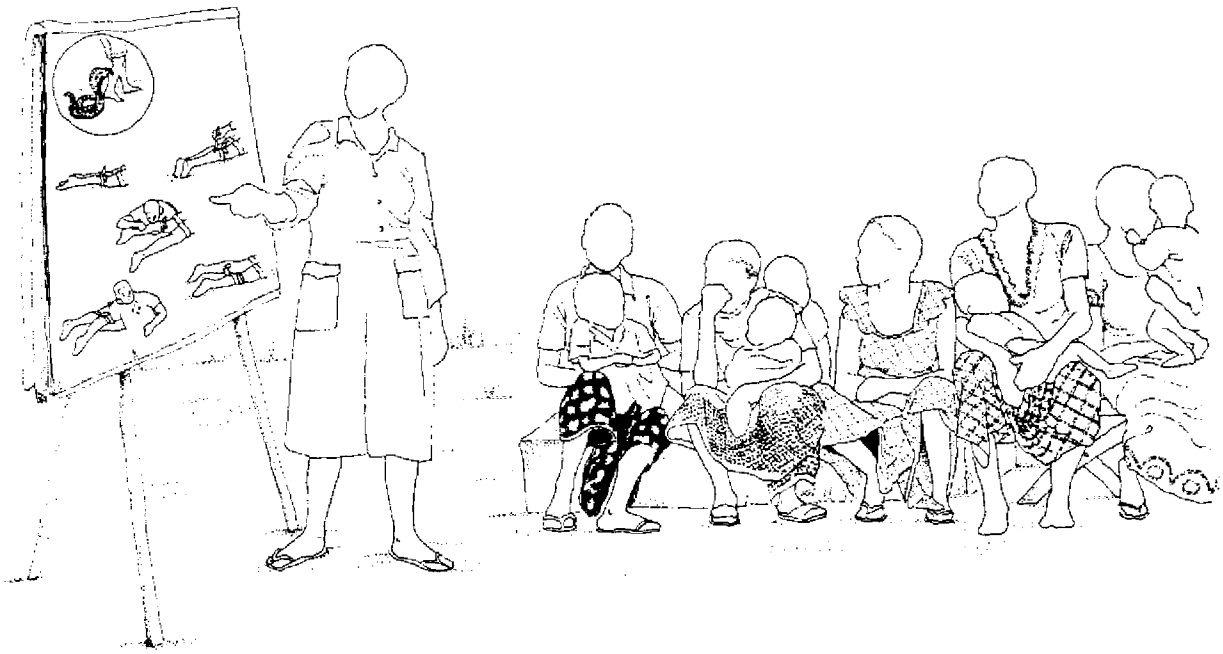
The training of voluntary health workers

The training of voluntary health workers is important for any programme directed at the general public. It should include initiatives specifically concerned with disaster-preparedness. Below are a few examples of the tasks which voluntary health workers can be trained to take over in an emergency:

- collaboration in first aid,
- reception of cases at the health facility,
- liaison with the family groupings,

[1] See *WHO emergency health kit : standard drugs and clinic equipment for 10 000 persons for 3 months*. Geneva, World Health Organization, 1984 (new edition in preparation)

[2] See also. *Health services organization in the event of disaster* Washington DC, Pan American Health Organization, 1983 (Scientific Publication No. 443)



- operation of the health information system,
- collaboration in carrying out programmes of vaccinations, health education, environmental sanitation, nutrition, mental health, groups at risk, etc.

Preparedness activities for the population

In communities particularly exposed to the risk of disaster, local health personnel can include disaster-preparedness activities in the ordinary health programmes. For example, ordinary hygiene programmes can also deal with the problems of, and the way to behave in, the particular hygienic situation that arises as the result of an earthquake or a flood.

Disaster-preparedness activities are included in programmes focused on certain population groups:

- schools, occupational training centres,
- workplaces,
- neighbourhood groups,
- associations, groups of volunteers, etc.

Below are a few examples of the content of disaster-preparedness initiatives:

A. Training in first aid
- how to lift and transport an injured person,
- how to clear the airways and carry out artificial respiration,
- how to stop a haemorrhage,
- what to do in the case of burns, drowning, electrocution, snakebite, poisoning, etc.

B. Activities to ascertain health risks. The compilation of risk maps.

C. Exercises in sanitation and hygiene.
- utilization of safe water,
- fly control,
- vector control,
- rodent control,
- the protection of foodstuffs,
- use of latrines,
- ensuring a clean environment, controlled refuse disposal,
- measures against lice, scabies, parasites, etc.

D. Activities concerned with the health education of groups at risk.

E. Health activities as part of twinning arrangements.