

CONFERENCE INTERNATIONALE

SUR LA CATASTROPHE

DU LAC NYOS

Yaounde, Cameroun

(16-22 Mars 1987)

Historique

Dans la nuit du 21 au 22 août 1986, une émanation de gaz toxique(s) s'est produite au Lac Nyos, village situé près de WUM, chef-lieu du département de MENCHUM dans la province de NORD-OUEST. Cette catastrophe est l'un des événements les plus tragiques dus à une émanation naturelle de gaz toxique(s).

A la suite de cet événement, le chef de l'Etat, Son Excellence le Président Paul BIYA s'est rendu immédiatement sur les lieux et a lancé un appel à la solidarité internationale.

La Communauté Internationale a envoyé sur le terrain des équipes scientifiques et médicales ainsi que des dons en espèces et en nature pour aider les sinistrés et pour évaluer les effets sur la population et sur l'environnement. Certaines équipes ont étudié les aspects géologiques tandis que d'autres se sont occupées de l'un ou de plusieurs des aspects suivants: aspects biomédicaux, aspects écologiques et agro-pastoraux, aspects économiques et socio-culturels.

Plusieurs semaines après cet événement, Son Excellence le Président Paul BIYA a lancé l'idée d'une Conférence

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Internationale pour réunir tous les experts qui ont étudié les différents aspects du désastre.

Organisation

Cette Conférence Internationale, qui était placée sous le haut patronage du Chef de l'Etat, a été organisée par une Commission Nationale d'Organisation présidée par le Ministre de l'Enseignement Supérieur et de la Recherche Scientifique. Cette Commission Nationale était composée de membres de plusieurs Ministères du Cabinet Camerounais et de Directeurs des organismes de recherche ou de leurs représentants.

Le Comité Scientifique était présidé par le Directeur de la Recherche Scientifique et Technique, et était composé de Scientifiques Camerounais appartenant à différentes institutions et facultés ou à des organismes de recherche.

En plus des experts camerounais, environ cinquante experts étrangers ont été invités à participer à cette Conférence qui s'est déroulée au Palais des Congrès de Yaounde (voir liste ci-jointe).

Bureau de la Conférence

Après la cérémonie solennelle d'ouverture qui a suivi l'inscription des membres participants, le bureau de la Conférence a été voté sur une proposition du représentant de la Côte d'Ivoire.

Président : Prof. M. Bopelet (Cameroun)
Vice-Président : Dr. John P. Lockwood (USA)
Vice-Président : Prof. Haroun Tazieff (France)
Vice-Président : Prof. Georgio Marinelli (Italie)
Rapporteur Général: Prof. Sigvaldason (Islande)
Séance Plénière : Aspects Géologiques.
Rapporteur Prof. Gupta (India)
Séance Plénière : Aspects Biomédicaux et
Physico-Chimiques
Rapporteur Prof. Kaptue (Cameroun)
Séance Plénière : Aspects Ecologiques et Agro-pastoraux
Rapporteur Dr. S. Laham (Canada)
Séance Plénière : Aspects Socio-Culturels et Economiques
Rapporteur Prof. Shanklin (USA)
Séance Plénière : Etude des Cas et des Catastrophes
Rapporteur Dr. D. Ben Sari (Maroc)

Plusieurs rapports et cinquante communications scientifiques ont été présentés au cours des séances plénières qui ont été suivies de travaux effectués dans deux Commissions:

Commission A: Causes et Mécanismes du phénomène du
Lac Nyos déduits des observations
physiques, chimiques et biomédicales.

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Commission B: Evaluation et Zonation des risques.

Implications pour les mesures de
prévention à long terme et pour
l'aménagement du territoire.

Les travaux effectués en Commission ont été poursuivis bien après la clôture officielle de la Conférence jusqu'au Lundi 23 Mars 1987. Etant donné que cette Conférence a été organisée avec le concours du Programme des Nations Unies pour le Développement (PNUD), de la Commission Economique pour l'Afrique (CEA) et de l'UNESCO (Division des Sciences de la Terre), le rapport général qui groupera les rapports sur les quatre thèmes scientifiques mentionnés ci-dessus ainsi que les recommandations des deux commissions A et B auxquelles j'ai participé sera compilé et édité par ces organisations au cours de la dernière semaine de Mars 1987 et expédié à chacun des rapporteurs durant le mois d'Avril 1987.

En attendant le rapport général de la Conférence qui contient des recommandations importantes pour le Cameroun, je me permets d'ajouter le rapport de l'OMS (Bureau Régional de l'Afrique) qui vient de paraître (fin Mars 1987) et qui résume les observations cliniques faites par le consultant de l'OMS (voir document ci-joint).

Recommandations

L'Organisation Mondiale de la Santé a fait les recommandations suivantes:

1. Un Service d'urgence devrait être organisé comme unité du Service Régional de Santé sous la direction d'un coordonnateur ayant des fonctions bien définies et suffisamment d'autorité pour pouvoir agir rapidement.
2. Un plan détaillé d'action devrait être établi pour permettre une action rapide en cas de désastre. Ce plan qui devrait être revu de temps en temps devrait inclure des cours de perfectionnement pour le personnel du service d'urgence.

S. Laham

OTTAWA, 31 mars 1987.

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MESRES

1. INTRODUCTION

This paper is based on a report prepared by a WHO/AFRO consultant who was on an official mission to organize EPI activities in the area.

The disaster occurred on her arrival in the area and she therefore became actively involved in the emergency and relief operations.

2. PREPAREDNESS MEASURES

Where there is an awareness of imminent or potential risk of disaster, it is customary or expected that there will be a warning system to the extent feasible and a contingency plan and detailed plan of action for its prompt implementation when the need arises.

In this particular instance, the affected area is known to lie in what may be considered a relatively inactive volcanic area.

There are several settlements with the people actively engaged in agriculture because of the richness and fertility of the volcanic soil.

There is a report of what may be considered to be a minor disaster with 34 deaths in the area in 1984. (*Lac Monoun*).

It should be noted that the Lake Nyos type of disaster is very rare even in areas of active volcanic activity. Consequently, judging from disasters associated with volcanic eruptions, the absence of a warning system of impending disaster is to be expected. Although as expected, there was no warning system it does not appear that there was preparedness or a contingency plan to deal with such a disaster in spite of the previous experience.

3. THE DISASTER

The disaster obviously struck at night when people were indoors and asleep. It is not clear whether it was preceded by any signs which might have been an indication of some imminent disaster. Even if there were such a sign or signs, it is not clear whether there would have been sufficient time to evacuate the area in time to minimize the effects of the disaster at least as far as human lives are concerned.

Six principal settlements (Nyos Lake village, Sah-Ban, Cha, Abar, Koshin and Marshi) were affected.

It is estimated that only about 1% of the 700 inhabitants of Nyos Lake village survived and that 235 out of the 300 inhabitants of Sah-Ban died. Out of an estimated population of 10 000 in the affected area, 1750 deaths were recorded.

From the available information, a staff member of a Health Centre at Cha in the affected area, felt dizzy and eventually lost consciousness whilst returning to Cha from Wum, the district headquarters on a motorcycle on the morning of Friday, 22 August 1986 at about 6 a.m.

He is reported to have regained consciousness about three hours later and then continued his journey. On his way he came across a dead cow, then a dead bird and subsequently a human corpse. He therefore turned back to report his unusual experience and observations at Wum.

4. EMERGENCY MEDICAL AND RELIEF OPERATIONS

Emergency medical and relief operations were reported to have started earnestly on Saturday, 23 August 1986 about 36-48 hours after the disaster.

The operations were carried out under extremely difficult and trying conditions because of the rugged, difficult and mountainous terrain, heavy rains and obnoxious atmosphere.

The actions taken are summarized below.

4.1 Rapid assessment of the situation

All available resources were quickly mobilized to make an assessment of the situation in terms of the nature and possible cause of the disaster, the magnitude of the damage, remedial action to be taken, the resources needed for the implementation of the remedial action, what resources were immediately available and what additional resources were needed.

4.2 First aid and evacuation of survivors

The immediate action was a search for survivors, the administration of first aid and their prompt evacuation to the nearest hospitals at Wum and Nkambe.

4.3 Assessment and management of survivors

As has been mentioned earlier, there were no preparedness and contingency plans at Wum and Nkambe Hospitals to deal with the disaster.

The survivors were treated within the limitations of the immediately available resources.

A total of 268 victims were admitted to Wum Hospital and 300 to Nkambe Hospital. The resources of both hospitals were severely overstretched due to the sudden admission of such large numbers of patients.

Both hospitals had to improvise and put many patients on mats on the floor between beds and wherever suitable space was available.

The first action was to make a rapid clinical assessment and to start appropriate treatment as promptly as possible.

In this regard the clinical assessment revealed the following principal characteristics:

- symptoms and signs of pulmonary oedema and respiratory distress;
- first and second degree burns on the skin and other exposed parts suggestive of acid or corrosive actions;
- conjunctivitis.

Treatment was therefore organized accordingly. This consisted essentially of general supportive treatment, oxygen therapy where necessary, administration of antibiotics against possible secondary infections of the respiratory tract and treatment of burns.

The victims were predominantly adults. The case fatality rate was extremely low. One corpse was flown to Yaoundé for post-mortem examination which confirmed pulmonary congestion and oedema as the main causes of death.

Supplies, especially oxygen, antibiotics, bandages and dressings quickly ran into short-supply and additional supplies had to be brought in from Yaoundé.

The two hospitals were able to cope with the cases and there was no need to evacuate any patient to a central or other hospital for care.

4.4 Appeal for support and assistance

Having made a rapid assessment of the situation, the local authorities promptly reported to the national authorities and appealed for assistance largely in terms of personnel for detailed investigation of the cause of the disaster, assessment of the safety of the area for resettlement, supplies and equipment for the care of the victims in the hospitals, safe and prompt disposal of the dead and the establishment of temporary shelters for victims who did not require in-patient care.

In compiling the needs, special attention was given to essential items which could readily be obtained in the country.

These included antibiotics, bandages and dressings, oxygen, syringes, needles, analgesics, lime for the disposal of human and animal corpses, disinfectants, food and clothing.

There was prompt response from the national authorities. Health personnel, scientists and the armed forces all joined in the operations.

In this regard, the aerodrome at Bamenda, the Provincial Capital, played a very useful role in the transportation of supplies, equipment and personnel quickly by air.

The international community responded by sending scientists to investigate the disaster as well as some essential supplies.

4.5 Disposal of human and animal corpses

To prevent the precipitation of serious environmental and public health hazard in the area, attention was quickly given to the safe disposal of the human and animal corpses in mass graves after appropriate treatment.

4.6 Temporary shelters for displaced persons

The health and welfare of the displaced persons received adequate attention.

Temporary shelters with suitable sanitary facilities were established.

4.7 Monitoring of the safety of the environment

Sufficient attention was paid to the safety of the environment for two principal reasons:

- to conduct scientific investigations to detect the nature and cause of the disaster and to assess the damage and possibilities of further disaster;
- to see if resettlement could be immediate or postponed to a later date.

This was necessary for one important reason. If the area had to remain evacuated for any length of time, the displaced persons would have to be warned and discouraged from returning to the area and adequate plans would have to be made for their proper care.

5. CONCLUSIONS AND RECOMMENDATIONS

It is very clear from the available though not yet complete information that the Lake Nyos disaster is not a very common natural phenomenon even in areas where there is volcanic activity.

The actual cause and mechanism of the disaster is still unclear.

Consequently, it is not possible at this stage to devise a suitable warning system. Indeed it is not even clear as to whether a warning system is a practical proposition.

The absence of a preparedness or contingency plan for relief operations in general and medical emergency relief operations in particular are a significant observation.

Two major issues therefore emerge. One is whether the area should continue to be inhabited in the light of the calamities that can occur without warning. On this issue, judging from experiences and the situation in other volcanic areas, it will be extremely difficult and perhaps impossible to keep the area evacuated for any considerable length of time.

It is reasonable to assume that the area will continue to be inhabited for economic and other reasons.

This leads to the next issue which is preparedness to deal with any future eventualities.

Sufficient experience has been gained from the recent disaster to form the basis for the organization of a contingency plan to cope with a minor or major disaster that may occur with or without warning in the future.

Immediate attention should therefore be given to the establishment and development of adequate structures with capabilities of promptly responding to any disaster or threat of a disaster.

The details will not be dwelt with here since these will be dealt with separately in another paper. However, it may be pertinent to mention only a few of the essential elements:

- (i) An emergency health service should be established as an integral component of the health systems in the district(s). There should be a coordinator with adequate authority and clearly-defined roles and functions.
- (ii) A contingency plan and a detailed plan of action for prompt implementation should be made. The plan should be reviewed and tested from time to time. This should include training and periodic refresher courses for personnel.

