NATIONAL OPEN UNIVERSITY OF NIGERIA

SCHOOL OF SCIENCE AND TECHNOLOGY

COURSE CODE: EHS 316

COURSE TITLE: ENVIRONMENTAL HEALTH SERVICES IN EMERGENCY SITUATIONS

COURSE GUIDE

EHS 316
ENVIRONMENTAL HEALTH SERVICES IN EMERGENCY SITUATIONS

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INTRODUCTION

The study of environmental health services in emergency situations is concerned not only with emergency response, but also with measures designed to reduce the impact of disasters on environmental health infrastructure, such as water supply and sanitation facilities. It also aims to strengthen the ability of people to withstand the disruption of their accustomed infrastructure and systems for environmental health (e.g. shelter, water supply, sanitation, vector control etc.) and to recover rapidly.

In a growing number of mega-cities, environmental health conditions are poor at the best of times and catastrophic at times of emergencies and as people try to find places to live in these crowded cities, they occupy increasingly dangerous places—for example, on steep, unstable slopes, in flood plains and near hazardous factories. Rapid industrialisation and new technologies have produced new hazards and the severity and frequency of technological emergencies have increased.

With the proliferation of nuclear power and chemical plants over the last few decades, disasters on the scale of Chernobyl or Bhopal cannot be ruled out including political turbulence in many regions of the world, has also increased the numbers of refugees and displaced persons fleeing complex emergencies and disasters, who often congregate in large camps where environmental health measures are insufficient.

Their vital needs are urgent and massive reports the world health organisation. As a result, aid agencies are increasingly forced to challenge the orthodox distinctions between development and relief in the attribution of roles among government and nongovernmental organisations. In addition, global changes (environmental, economic and political) make an integrated approach to emergency management necessary.

WHAT YOU WILL LEARN IN THIS COURSE

This course carries 2 credit units. The course guide tells you what to expect from reading this course material. The study of EnvironmentalHealth Services in Emergency situations will familiarise you with the relationship that is increasingly indicating that global climatic change related to human activities is affecting human well-being and health.

You may be aware that emergencies and disasters can occur anywhere in the world, this course will enable you to see how environmental health

services in emergency situations is affecting human health, people's lives and the infrastructure built to support them.
You will also see how environmental health problems arising from emergencies and disasters are connected to their effects on the physical, biological and social environment that pose a threat to human health, well-being and survival: shelter, water, sanitation, disease vectors, pollution, etc.

This course deals with the management of such problems, particularly from the standpoint of the individual with environmental health responsibilities before, during and after emergencies and disasters

COURSE AIMS

The aim of this course is to provide you a good understanding of environmental **health services in emergency situations in other to r**educe the vulnerability of communities to hazards and increasing their ability including to help them to withstand disruption and to recover rapidly as well as strengthening routine services so that the potential health effects of emergencies and disasters are minimised.

COURSE OBJECTIVES

After going through this course, you should be able to:

- define emergency and disaster,
- describe the concept of emergency and disaster,
- identify the types of emergencies and disasters,
- describe the disaster-management cycle
- discuss emergency preparedness policy;
- discuss water-supply preparedness and protection in disaster or emergency;
- describe roles and responsibilities in disaster management,
- explain disaster and emergency management plan and response,
- appreciate the role of national government in disaster/emergencies;
- explain emergency contingency plan and its usefulness;
- state the roles of EHOs in emergencies and disasters;
- describe assessment of the situation, evacuation, environmental health measures, and organisation of environmental health activities;
- explain checklist for emergency in relation to evacuation relief centre, managing people, and community recovery evaluation.

WORKING THROUGH THIS COURSE

This course has been carefully put together bearing in mind that you might be new to the course. However, efforts have been made to ensure that adequate explanation and illustrations were made to enhance better understanding of the course. You are therefore, advised to spend quality time to study this course and ensure that you attend tutorial sessions where you can ask questions and compare your knowledge with that of your classmates.

COURSE MATERIALS

The major components of the course including the following:

1. Course guide
2. Study units
3. Textbooks and references
4. Assignment file
5. Presentation schedule

In addition, this course comes with a list of recommended text books which are not compulsory for you to buy or read, but are essential to give you more insight to various topics discussed.

STUDY UNITS

This course is divided into thirteen units. The following are the study units contained in this course:

Modules 1

Unit 1	Definitions and Concepts of Emergencies and Disasters
Unit 2	Types, Causes and Effects of Emergencies and Disasters
Unit 3	Scope of Emergencies and Disasters in Environmental Health Services

Module 2

Unit1	Institutional Arrangement for Environmental Health Services in Emergency Situations
Unit 2	Environmental Health Services in Emergency Situations

Module 3

Unit 1	Roles of various Agencies in Emergencies and Disasters
Unit 2	Procedures in the Management of Emergencies and Disasters
Unit 3	Roles and Collaboration of Agencies in Environmental Health Services in Emergency Situations
Unit 4	Resources mobilisation, Allocation and Management in Environmental Health Services
Unit 5	Roles of Environmental Health Officers in Emergency Situations

Module 4

Unit 1	Forecasting in Emergency Situations
Unit 2	Preparedness and response in Emergency Situations
Unit 3	Checklist for use in Emergency Situations

Module 1

In this module which begins with Unit 1, you will be taken through the definitions and concepts of emergencies and disasters; types, causes and effects of emergencies and disasters as well as the scope of emergencies and disasters in environmental health services.

Module 2

In this module you will be taken through the institutional arrangement for environmental health services in emergency situations.

Module 3

This module is designed to take you through the roles of various agencies in emergencies and disasters. You will also be taken through the procedures in the management of emergencies and disasters. Roles and collaboration of agencies in environmental health services in emergency situations will be discussed in this module. Resources mobilisation, allocation and management in environmental health services including the roles of environmental health officers in emergency situations will be addressed.

Module 4

In this module you get to know about forecasting in emergency situations; preparedness and response in emergency situations. Also checklist for use in Emergency Situations will be addressed.

TEXTBOOKS AND REFERENCES

The following are list of textbooks, journals and website addresses that can be consulted for further reading:

Commonwealth of Australia (2011). Australian Emergency Management Handbook Series:Community Recovery Handbook 2. (ed.) Australian emergency management institute, Barton, Australia.

Eric K. Noji (1997). *The Public Health Consequences of Disaster*.Oxford University Press. NY).

National Open University of Nigeria (2010). Emergency: Riot and Disaster Control Management. Lagos:National Open University of Nigeria (NOUN),

Pan American Health Organisation (1999). Humanitarian Assistance in Disaster Situations:a guide for effective aid. Washington: PAHO.

Reliefweb Project (2008). Glossary of Humanitarian Terms. Geneva: Reliefweb.

State of Georgia (2011).Department of Public Health and Environmental Health. Environmental Health Emergency Response Plan, United States of America: State of Georgia.

Twin Cities Metro Advanced Practice Centre (2007).Environmental Health. USA: EmergencyResponse Guide.

United Nations High Commissioner for Refugees (2007).Handbook for Emergencies. Geneva:Third Edition.

World Health Organisation (2002).Environmental health in emergencies and disasters: A practical guide. Geneva: World Health Organisation.

World Health Organisation (2002).Environmental health in emergencies and disasters: A practical guide. Geneva: WHO.

ASSIGNMENT FILE

In this file, you will find the details of the work you must submit to your tutor for marking. The marks you obtain will form part of your total score for this course.

ASSESSMENT

There are two components of assessment for this course. They are the Tutor-Marked
Assignment (TMA) and the End of Course Examination

TUTOR-MARKED ASSIGNMENT

The TMA is the continuous assessment component of your course. It accounts for 30% of the total score. The TMAs will be given to you by your facilitator. You will be able to complete your assignment from the information gathered from reading the study units and other recommended texts.

However, it is desirable that you research more and read other references as this will give you a broader view point and may provide a deeper understanding of the subject.

When you have completed each assignment send it to your tutor. Make sure that each assignment reaches your tutor on or before the deadline given in the presentation schedule and assignment file. If for any reason, you cannot complete your work on time, contact your tutor to discuss the possibility of an extension. Extensions will not be granted after the due date, except for exceptional circumstances.

FINAL EXAMINATION AND GRADING

The final examination for this course will take three hours and have a value of 60% of the total course grade. The examination will consist of questions which reflect the types of self-assessment exercises and tutor-marked problems you have previously encountered. All areas of the course will be assessed. Take time to revise the entire course before the examination. The examination covers information from all parts of the course.

PRESENTATION SCHEDULE

Your course materials give you important dates for attending tutorials and the timely completion and submission of your Tutor-Marked Assignments. Do remember that you are required to submit all your assignments by the due date. You should guard against falling behind in your work.

COURSE MARKING SCHEME

The following table lays out how the actual marking scheme is broken down.

Table 1: Course Marking Scheme

Assessment	**Marks**
Assignments 1 – 4	Four assignments count 12.5% each = 40% of course marks
Final Examination	60% of overall course marks
Total	100% of course marks

COURSE OVERVIEW

This table brings together the units, the number of weeks you should take to complete them and the assignment that follows them.

Table 2: Course Schedule

Units	**Title of Work**	**Weeks Activity**	**Assessment (End of Unit**
	Course Guide		
	Module 1		
1	Definitions and Concepts of Emergencies and Disasters	1	**Assignment 1**
2	Types, Causes and Effects of Emergencies and Disasters	1	
3	Scope of Emergencies and Disasters in Environmental Health Services	1	
			Assignment 2
	Land use System in Nigeria	1	
	Module 2		
1	Institutional Arrangement for Environmental Health Services in Emergency Situations	1	
2	Environmental Health Services in	1	

	Emergency Situations		
			Assignment 3
	Module 3		
1	Roles of various Agencies in Emergencies and Disasters	1	
2	Procedures in the Management of Emergencies and Disasters	1	
3	Roles and Collaboration of Agencies in Environmental Health Services in Emergency Situations	1	**Assignment 4**
4	Resources Mobilisation, Allocation and Management in Environmental Health Services	1	
5	Roles of Environmental Health Officers in Emergency Situations	1	
	Module 4		**Assignment 5**
1	Forecasting in Emergency Situations	1	
2	Preparedness and response in Emergency Situations	1	**Assignment 6**
3	Checklist for use in Emergency Situations	1	
	Revision	**1**	
	Examination	**13**	

HOW TO GET THE MOST FROM THIS COURSE

In distance learning, the study units replace the conventional university lecturer. This is one of the great advantages of distance learning; you can read and work through specially designed study materials at your own pace, and at a time and place that suit you best.

Each of the study units follows a common format. The first item is an introduction to the subject matter of the unit and how a particular unit is integrated with the other units and the course as a whole. Next is a set of learning objectives. These objectives let you know what you should be able to do by the time you have completed the unit. You should use these objectives to guide your study. When you have finished the unit, you must go back and check whether you have achieved the objectives. If you make a habit of doing this you will significantly improve your chances of passing the course.

Self-assessment exercises are interspersed throughout the units. Working through these exercises will help you to achieve the objectives of the unit and prepare you for the assignments and the examination. You should do each exercise as you come to it in the study unit. There will also be numerous examples given in the study units; work through these when you come to them too.

FACILITATORS/TUTORS AND TUTORIALS

There are 20 hours of tutorials (ten 2-hour sessions) provided in support of this course. As soon as you are allocated a tutorial group, you will be notified of the dates, times and location of tutorials, together with the name and phone number of your tutor.

Your tutor will mark and comment on your assignments; he/she will keep a close watch on your progress and on any difficulties you may encounter and provide assistance to you during the course. You must mail your tutor-marked assignments to your tutor well before the due date (at least two working days are required). They will be marked by your tutor and returned to you as soon as possible.

Do not hesitate to contact your tutor by telephone, e-mail, or via the discussion board if you need help. The following might be circumstances in which you would find help necessary.

Contact your tutor if:

- you do not understand any part of the study unit
- you have difficulty with the assignments/ exercises
- you have a question or problem with your tutor's comments on any assignment or with the grading of an assignment.

You should try your best to attend tutorials. This is the only chance to have face to face contact with your tutor and to ask questions. You can raise any problem encountered in the course of your study. To gain the maximum benefit from the tutorials, prepare a list of questions before hand, you will learn a lot from participating actively in the discussions.

SUMMARY

This course intends to provide you with the knowledge of environmental health services in emergency situations as it affects man’s health, welfare, and activities as well as the physical environment. At the end of this course, you will be able to answer the following questions:

- Define the following: - Preparedness, disaster risk reduction.
- Describe the health problems common to all emergencies and disasters.
- Discuss briefly the steps in disaster Management;
- Enumerate the issues in emergency management policy?
- Discuss the measures for controlling communicable diseases and epidemics?
- Mention the roles of community in disaster management?
- Enumerate the disaster management strategies that the community structures shall adopt?
- Discuss the Coordination of disaster management in terms of procedures in disaster and emergency management?
- List 4 United Nations agencies and write notes on their roles and collaborations?
- Discuss the principles of good humanitarian donor ship?

We wish you success in this course and hope that you will apply the knowledge gained to link emergencies, disasters and development, not only in policy statements, but in practical ways.

Good luck!

MAIN COURSE

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MODULE 1 INTRODUCTION TO EMERGENCY SITUATIONS

UNIT 1 DEFINITIONS AND CONCEPTS OF EMERGENCIES AND DISASTERS

CONTENTS

1.0 INTRODUCTION

The words emergency and disaster have been part of our lives and existence for as long as we can remember. Whenever these words (emergency and disaster) are mentioned, they bring us the greatest concernirrespective of the level of civilisation, religious affiliation, social and political inclinations. When situations of emergency and disasteroccur, the health and well-being of people are usually affected. It is certain that large number of people are displaced, killed or injured, even subjected to greater risk of epidemics. However, between the words, there is difference in definition and meaning.

We shall be presenting the definitionsand basic understanding of emergency and disaster including other definitions in use in this unit.

2.0 OBJECTIVES

At the end of this unit,you should be able to:

- define emergency and disaster
- describe the concept of emergency and disaster
- identify other definitions in use in the field of humanitarian work.

3.0 MAIN CONTENT

3.1 Definition of Emergency

The word emergency originated from the Latin word “emergere” or “merger” meaning to rise out or move up, dive, or plunge (NOUN, 2010). To an uneducated person, the word emergency means sudden crisis requiring action. An emergency is a situation that poses an *immediate risk* to health, life, property or environment(www.wikipedia.org). Most emergencies require urgent intervention to prevent a worsening of the situation, although in some situations, mitigation may not be possible and agencies may only be able to offer palliative (alleviating pain and symptoms without eliminating the cause) care for the aftermath. While some emergencies are self evident (such as a natural disaster that threatens many lives), many smaller incidents require the subjective opinion of an observer (or affected party) in order to decide whether it qualifies as an emergency.

In this case it is wise, to have the precise definition of emergency depends on the agencies involved and the procedures used, and this vary by jurisdiction. The United Nations High Commission for Refugees (UNHCR) defines emergency as “any situation in which the life or well-beingof people (refugees) will be threatened unlessimmediate and appropriate action is taken,and which demands an extraordinaryresponse and exceptional measures”. Looking at this definition, you will note that the UNHCR sees emergency as a situation that comes about when there is sudden refugee influxes as well as situations which demand an extraordinary response from UNHCR. According to UNHCR, an emergency can develop in an existing operation, such as when events suddenly place in danger refugees who had previously enjoyed asylum in safety. It can also erupt during the final phase of an operation as in the case of a large-scale repatriation.

In the environmental health emergency response plan of Georgia State Department of Public Health, (2011), emergencyis defined as "an unforeseen combination of circumstances or the resulting state that calls for immediate action" or "an urgent need for assistance or relief". In the same vein, Relief web, (2008), defines emergency as: “A sudden and

usually unforeseen event that calls for immediate measures to minimize its adverse consequences". Therefore, an emergency is a situation or state characterised by a clear and marked reduction in the abilities of people to sustain their normal living conditions, with resulting damage or risks to health, life and livelihoods.

For the purposes of WHO's humanitarian emergency activity, an emergency is: "any public health situation endangering the life or health of a significant number of people and demanding immediate action". This definition would be appropriate because emergency is a situation arising from a disaster. Accordingly, an emergency may be from a natural or man-made disaster, or be a complex (conflict) emergency. Whichever way it is looked at, emergency involves the health of the public as well as focusing on some measure of the cost of the event in terms of social, economic, environmental, developmental and political consequences for the communities they impact. It is important that we continue to expand our understanding of the physical attributes of the hazards to which our communities may be subject, in order to find ways to prevent emergencies occurring and to reduce their impacts.

3.2 Definition of Disaster

Various definitions of disasters have been given by scholars, practitioners and disasters victims. However, despites different opinions on the concept, one common denominator that seem to be paramount is that disaster connote negative event leading to suffering and destruction. Etymologically (study of word origin), the word disaster originates from the French *désastre*and that from Old Italian *disastro*, which in turn comes from the Greek Pejorative prefix *δυσ-*, (*dus*-) "bad" + *αστήρ*(*aster*), "star" Henry Geoge Liddell and Robert Scott quoted in Susanna and Oliver-smith, (2002). The root of the word *disaster* ("bad star" in Greek) comes from an astrological theme in which the ancients used to refer to the destruction or deconstruction of a star as a disaster (NOUN, 2010). 'Disaster' is defined as "a crisis situation causing wide spread damage which far exceedsour ability to recover"*(*www.icm.tn.gov.in/article/disaster.htm).

Thus, by this definition, there cannot be a perfect ideal system that prevents damage, because then, it would not be a disaster. It has to suffocate our ability torecover. Only then it can be called 'disaster'.Disasters are not totally discrete events. Their possibility of occurrence, time, place andseverity of the strike can be reasonably and in some cases accurately predicted bytechnological and scientific advances. It has been established; there is a definite pattern intheir occurrences and hence we can to some extent reduce the impact of damagethough,we cannot reduce the extent of damage itself.

3.3 The Concept of Emergency and Disaster

Emergency and disaster are words we are very familiar with and which we use interchangeably. Both words refer to catastrophe, crisis, tragedy, calamity, predicament and crunch. Wheneverthere are emergencies and disasters, there are also environmental hazards. These hazards can always be a threat to human health because of the disruption of properly working systems,such as damage to solid waste handling structures, leading to contamination of soil, water and food thereby exposing people to disease-causing agents such as bacteria, viruses, etc.It is important to know also that emergencies, disasters and development are closely connected because it is a time that multi-disciplinary teams including environmental health officers and other public health professionalsas well as displaced persons or refugees come together purposefully in reconstruction and encourage self-reliance and help avoid dependency, UNHCR (2007).

Intimes of emergency or disaster and recovery, people from many backgrounds engage in activities designed to monitor, restore and maintain public health thereby provide new development opportunities. Likewise, health workers find themselves cooperating with others to help with non-health-related work, such as search-and-rescue, or work that is only indirectly related to health, such as public education (WHO; 2002).

Emergencies and disasters bring about hazards and extreme events.A hazard is any phenomenon (occurrence that can be observed), that has the potential to cause disruption or damage to humans and their environment, (WHO; 2002). Hazards are the potential (likelihood of occurring) for an event, not the event itself. According toEric(1997), it should be kept in mind that occurrences regarded as “disasters” (earthquake, typhoon, volcanic eruption, war, etc.) are really hazards that transform a vulnerable condition into a disaster.Therefore, a reduction in vulnerabilities (without adequate protection) would result in reduction of the impact of hazards.

On the other hand, extreme events are natural or man-made processes operating at the extremes of their range of energy, productivity, etc. For example, mudslides, floods, coastal storms, locust or rat invasions are all natural, but extreme events, and to some extent the likelihood of them occurring, may be estimated. Many extreme events, such as severe floods, have been monitored and recorded over many years and have a known probability of occurrence. Man-made hazards, such as the potential for leaks of dangerous chemicals or radiation also exist and many so-called natural hazards become events or are exacerbated (make worse) by human activity. For instance, flooding in Bangladesh during

the 1990s was made worse because large numbers of discarded plastic bags blocked drainage systems, WHO (2002). Extreme events create stress in human systems and structures because the forces involved are greater than those with which the systems and structures normally cope. For instance, all houses will withstand some wind, but beyond a certain wind speed all will fail.

3.4 Other Definitions in Use

The definitions presented here have been compiled from existing glossaries and other reference material available to the public, with a focus on their common usage and understanding within a humanitarian context, particularly as relating to natural disasters, complex emergencies and disaster risk reduction (ReliefWeb, 2008).

Advocacy

Advocacy refers in a broad sense to efforts to promote, in the domain ofhumanitarian aid, respect for humanitarian principles and law with a view to influencing therelevant political authorities, whether recognised governments, insurgent groups or othernon-state actors. One could add ‘international, national and local assistance agencies’.

Assessment

Assessment (and Re-Assessment): The set of activities necessary to understand a given situation, entails the collection, up-dating and analysis of data pertaining to the population of concern (needs, capacities, resources, etc.), as well as the state of infrastructure and general socio-economic conditions in a given location/area.

Assistance

Aid provided to address the physical, material and legal needs of persons of concern. This may include food items, medical supplies, clothing, shelter, seeds and tools, as well as the provision of infrastructure, such as schools and roads. “Humanitarian assistance” refers to assistance provided by humanitarian organisationfor humanitarian purposes (i.e., non-political, non-commercial, and non-military purposes).

Asylum

This is the granting, by a State, of protection on its territory to persons from another Statewho are fleeing persecution or serious danger. A person who is granted asylum may be arefugee. A person who has left

her country of origin and has applied for recognition as arefugee in another country and whose request or application for refugee-status has not beenfinally decided by a prospective country of refuge is formally known as an asylum-seeker.

Biological Disaster

Disaster caused by the exposure of living organisms to germs andtoxic substances.

Biological Hazard

Processes of organic origin or those conveyed by biological vectors,including exposure to pathogenic micro-organisms, toxins and bioactive substances, whichmay cause the loss of life or injury, property damage, social and economic disruption orenvironmental degradation.

Capacity

Is a combination of all the strengths and resources available within a community, society or organisation that can reduce the level of risk, or the effects of a disaster.

Capacity Building

A process by which individuals, institutions and societies developabilities, individually and collectively, to perform functions, solve problems and set andachieve their goals.

Civil Society

This refers to structures independent from governments such as non-governmental organisations and human rights groups, independent activists and human rights defenders, religious congregations, charities, universities, trade unions, legal associations, families and clans. Domestic civil society represents one of the most critical sources of humanitarian assistance and civilian protection during humanitarian emergencies.

Civilian Populations

CP is groups of unarmed people, including women, children, the sick and elderly, refugees and internally displaced persons, who are not directly engaged in the armed conflict.

Climate Change

The Inter-governmental Panel on Climate Change (IPCC) definesclimate change as "a change in the state of the climate that can be identified (e.g., by usingstatistical tests) by changes in the mean and/or the variability of its properties, and thatpersists for an extended period, typically decades or longer. Climate change may be due tonatural internal processes or external forcing or to persistent anthropogenic changes in thecomposition of the atmosphere or in land use"

Coercion

This is the use of force, or the threat of force, to persuade an opponent to adopt ascertain pattern of behaviour that is against their wishes. (OCHA)

Community-Based Approach

Community-based approach motivates women, girls, boys and men in the community to participate in a process which allows them to express their needs and to decide their own future with a view to their empowerment. It requires recognition that they are active participants in decision-making. It also seeks to understand the community's concerns and priorities, mobilizing community members and engaging them in protection and programming. The focus is on helping refugees organize themselves to solve their own problems. The role of UNHCR is to support the building, rebuilding and strengthening of communities' capacities to respond to protection risks and to make decisions over access to and use of resources. Participatory assessment is carried out in the spirit of shared responsibility for enhancing protection of all members of the community and is an essential component of community-based work.

Complex Emergency

A multifaceted humanitarian crisis in a country, region or society where there is a total or considerable breakdown of authority resulting from internal or external conflict and which requires a multi-sectoral, international response that goes beyond the mandate or capacity of any single agency and/or the ongoing UN country programme. Such emergencies have, in particular, a devastating effect on children and women, and call for a complex range of responses.

Conflict

A social factual situation in which at least two parties (individuals, groups, states) are involved, and who: i) strive for goals which are

incompatible to begin with or strive for the same goal, which, can only be reached by one party; and/or ii) want to employ incompatible means to achieve a certain goal."

Conflict Analysis

Identification and comparison of positions, values, aims, issues, interests, and needs of conflict parties.

Conflict Prevention

Measures to avert violent conflict and put in place the means to resolve future disputes non-violently. Strategies for prevention fall into two categories: operational prevention, which refers to measures applicable in the face of immediate crisis, and structural prevention, which consists of longer term measures to ensure that crises donot arise in the first place or, if they do, that they do not recur. These activities are generallyconducted under Chapter VI of the UN Charter, and include preventative deployments offorces, fact-finding missions, consultations, warnings, inspections and monitoring. (OCHA)

Conflict Resolution

CR is the resolution of conflict usually by conciliation. Contingency Planning:A management tool used to ensure that adequate arrangements are made in anticipation ofa crisis. This is achieved primarily through engagement in a planning process leading to aplan of action, together with follow-up actions.

Critical Facilities

This is the major physical structures or facilities which are socially, economically or operationally essential to a society's functioning, both in general as well as in the extreme circumstances of an emergency. Comment: Critical facilities include such things as roads, railways, bridges, air and sea ports, electricity and water supplies, communications systems, hospitals, public administration centres, and police stations.

Cyclone

Cyclone is a large-scale closed circulation system in the atmosphere with low barometric pressure and strong winds that rotate counter clockwise in the northern hemisphere and clockwise in the southern hemisphere. The system is referred to as a cyclone in the Indian Ocean

and South Pacific, hurricane in the western Atlantic and eastern Pacific and typhoon in the western Pacific.

Declaration of Disaster

Official issuance of a state of emergency upon the occurrence of a large-scale calamity, in order to activate measures aimed at the reduction of the disaster's impact.

Diplomacy

The conduct of international relations by negotiation rather than by force, propaganda, or recourse to law, and by other peaceful means (such as gathering information or engendering goodwill) which are either directly or indirectly designed to promote negotiation... Diplomacy is an activity which is regulated by custom and by law, though flexibility remains one of its vital features"

Disaster Legislation

Is thebody of laws and regulations that govern and designate responsibility for disaster management concerning the various phases of disaster.

Disaster Management

DM is a comprehensive approach and activities to reduce the adverse impacts of disasters.

Disaster Mitigation

Is a set of measures to reduce or neutralise the impact of natural hazardsby reducing social, functional, or physical vulnerability.

Disaster Preparedness

The organisation, education, and training of the population and allrelevant institutions to facilitate effective control, early warning, evacuation, rescue, relief and assistance operations in the event of a disaster or emergency.

Disaster Prevention

This is the elimination or reduction of the likelihood that natural events mayendanger human beings, their goods, their social assets, or their environment.

Disaster Response

This is a sum of decisions and actions taken during and after disaster,including immediate relief, rehabilitation, and reconstruction.

Disaster Risk

This is magnitude of potential disaster losses, in lives, livelihoods and assets,which could occur to a particular community or group, arising from their exposure to possiblefuture hazard events and their vulnerability to these hazards.

Disaster Risk Management

Is the systematic process of using administrative decisions, organisation, operational skills and capacities to implement policies, strategies and copingcapacities of the society and communities to lessen the impacts of natural hazards andrelated environmental and technological disasters. This comprises all forms of activities,including structural and non-structural measures to avoid (prevention) or to limit (mitigationand preparedness) adverse effects of hazards.Comment: This comprises all forms of activities, including structural and non-structuralmeasures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards.

Disaster Risk Reduction

Action taken to reduce the risk of disasters and the adverseimpacts of natural hazards, through systematic efforts to analyse and manage the causes ofdisasters, including through avoidance of hazards, reduced social and economic vulnerabilityto hazards, and improved preparedness for adverse events.

Disaster Risk Reduction Plans

It is formal documents that set out authorities' goals fordisaster risk reduction together with relatedsequences of actions to accomplish statedobjectives towards these goals.

Disaster Team

Multidisciplinary, multi-sectoral group of persons qualified to evaluate adisaster and to bring the necessary relief.

Displacement

Is a forcible or voluntary uprooting of persons from their homes by violent conflicts, gross violations of human rights and other traumatic events, or threats thereof. Persons who remain within the borders of their own country are known as internally displaced persons. Persons who are forced to flee outside the borders of their state of nationality or residence for reasons based on a well-founded fear of persecution on the grounds identified in the 1951 Refugee Convention or to flee conflict in the case of States Parties to the 1969 OAU Convention or 1984 Cartagena Declaration on Refugees are known as refugees.

Emergency Management

This means organisation and management of resources andresponsibilities for addressing all aspects of emergencies, in particular preparedness,response and rehabilitation.

Emergency Relief

The immediate survival assistance to the victims of crisis and violentconflict of which most relief operations are initiated on short notice and have a short implementationperiod (project objectives are generally completed within a year). The main purpose ofemergency relief is to save lives.

Emergency Services

Emergency services are the set of specialized agencies that have specific responsibilities and objectives in serving and protecting people and property inemergency situations.

Flood

This is overflowing of water of the normal confines of a stream or other body of water, orthe accumulation of water by drainage over areas, which are not normally submerged.Excludes Tidal flooding in coastal zones will be reported as “Storm Surge.”

Hazard

Hazard is natural processes or phenomena or human activities that can cause the loss of lifeor injury,property damage, social and economic disruption or environmental degradation.

Hazard Mapping

Is the process of mapping hazard information within a study area of varyingscale, coverage, and detail.

Humanitarian Intervention

While there is no agreed upon international definition of"humanitarian intervention" yet, it is a doctrine generally understood to mean coercive actionby States involving the use of armed force in another State without the consent of itsgovernment, with or without authorization from the UN Security Council, for the purpose ofpreventing or putting to a halt gross and massive violations of human rights or internationalhumanitarian law. The UN's operations in Northern Iraq and Somalia, and NATO's operationin Kosovo have all been termed humanitarian intervention.

Humanitarian Operations

Operations conducted to relieve human suffering, especially incircumstances where responsible authorities in the area are unable or unwilling to provideadequate service support to civilian populations.

Humanitarian Worker

Includes all workers engaged by humanitarian agencies, whetherinternationally or nationally recruited, or formally or informally retained from the beneficiarycommunity, to conduct the activities of that agency.

Intervention

Intervention is a move by a state or an international organisation to involve itself in thedomestic affairs of another state, whether the state consents or not.

This can include:

i) preventive interventions before the outbreak of a conflict;
ii) curative intervention that aims at the solution, limitation, control or regulation of an existingconflict;
iii) de-escalating intervention that aims at reducing tension and must be based oninsight into the factors and mechanisms that led to escalation; and
iv) escalating interventions, it can be in the interest of a permanent conflict resolution to escalate a 'cold'conflict (one in which the parties avoid both contact and confrontation).

Logistics

The range of operational activities concerned with supply, handling, transportationand distribution of materials. It is also applicable to the transportation of people.

Mediation

This is a process in which a third-party neutral acts as a facilitator to assist in resolvinga dispute between two or more parties in an armed conflict. It is a non-adversarial approachto conflict resolution, where the parties generally communicate directly; the role of the mediator is to facilitate communication between the parties, assist them in focusing on thereal issues of the dispute, and generate options for settlement.

Millennium Declaration

A resolution adopted unanimously by the General Assemblyfollowing the UN Millennium Summit on 8 September 2000 that embodies a large number ofspecific commitments aimed at improving the fate of humanity in the 21st century. The keyobjectives identified in the Declaration are: Peace, security and disarmament; Developmentand poverty eradication; protecting our common environment; Human rights, democracy andgood governance; protecting the vulnerable; Meeting the special needs of Africa; andStrengthening the United Nations (OCHA).

Millennium Development Goals (MDGs)

A summary of development goals set atinternational conferences and world summits during the 1990s.

Mitigation

Measures taken in advance of a disaster aimed at decreasing or eliminating itsimpact on society and environment.

Natural Disaster

Natural disasters are events brought about by natural hazards thatseriously affect the society, economy and/or infrastructure of a region. Depending onpopulation vulnerability and local response capacity, natural disasters will pose challengesand problems of a humanitarian nature.

Natural Hazards

This is a natural processes or phenomena that may cause the loss of life or injury,property damage, social and economic disruption or environmental degradation.

Non-Governmental Organisation (NGO)

It is an organized entity that is functionally independent of, and does not represent, a government or State. It is normally applied to organisations devoted to humanitarian and human rights causes, a number of which haveofficial consultative status at the United Nations.

Potable Water (Drinking Water)

It is water that satisfies health standards, with respect to itschemical and bacteriological composition, and is agreeable to drink. (UN DHA).

Preparedness

The capacities and knowledge developed by governments, professional response organisations, communities and individuals to anticipate and respond effectively tothe impact of likely, imminent or current hazard events or conditions.

Prevention

Are the activities to provide outright avoidance of the adverse impacts of hazards and means to minimize related environmental, technological and biological disasters.

Reconstruction

A set of activities aimed at achieving the medium- and long-term recoveryof the components and structures that have been affected by a disaster or emergency.

Recovery

A focus on how best to restore the capacity of the government and communitiesto rebuild and recover from crisis and to prevent relapses into conflict. In so doing, recoveryseeks not only to catalyse sustainable development activities, but also to build upon earlier humanitarian programmes to ensure that their inputs become assets for development.

Refugee

A person, who owing to a well-founded fear of being persecuted for reasons ofrace, religion, nationality, membership of a particular social group or political opinion, or forreasons owing to external aggression, occupation, foreign domination or events seriouslydisturbing public order in either part or the whole of his country of origin or nationality, iscompelled to leave his place of habitual residence in order to seek refuge outside his countryof origin or nationality and is unable or, owing to such fear, is unwilling to avail himself of theprotection of his country of origin or nationality.

Relief

Assistance and/or intervention during or after disaster to meet the life preservationand basic subsistence needs. It can be of emergency or protracted duration.

Resilience

The capacity of a system, community or society potentially exposed to hazardsto resist, adapt, and recover from hazard events, and to restore an acceptable level offunctioning and structure.

Risk

Degree of danger associated with a given operation, course of action, or failure to actin crisis situation. For conflict forecasting, it makes sense to distinguish between levels ofrisks, for example: i) high risk; ii) high moderate risk; iii) moderate risk; iv) low moderate risk; v) low risk.

Risk Assessment

Calculation and/or simulation of degree of danger attached to a courseof action for the purpose of uncertainty reduction. "Risk assessment and early warning aredistinct but complementary activities. Risk assessments are based on the systematicanalysis of remote and intermediate conditions. Early warning requires near real-timeassessment of events that, in a high risk environment, are likely to accelerate or trigger therapid escalation of conflict."

Risk Mapping

A risk map is a map of a community or geographical zone that identifies theplaces and the structures that might be adversely affected in the event of a hazard.The production of a risk map requires consideration of areas

and features threatened withinthe community or geographical zone, consultation with people and groups of varyingexpertise, and the discussion of possible solutions to reduce risk.The benefits of this technique are that it helps to locate the major hazards; they can createshared criteria for decision-making, they can provide a record of historical events that havehad a negative impact on the community, and they identify risks so a community may findsolutions or take precautions.

Risk Management

Is a structured approach to manage uncertainty and potential lossesthrough a process of risk assessment and the development of strategies and specific actionsto control and reduce risks.

Sanitation

The application of measures and techniques aimed at ensuring and improvinggeneral hygiene in the community, including the collection, evacuation and disposal of liquidand solid wastes, as well as measures for creating favourable environmental conditions for health and disease prevention.

Search and Rescue

The process of locating and recovering disaster victims and theapplication of first aid and basic medical assistance as may be required.

Secondary Hazards

These hazards occur as a result of another hazard or disaster,i.e., fires or landslides following earthquakes, epidemics following famines, food shortagesfollowing drought or floods.

Sustainability

Sustainability ‘is concerned with measuring whether an activity or an impactis likely to continue after donor funding has been withdrawn, many humanitarianinterventions, in contrast to development projects, are not designed to be sustainable. Theystill need assessing, however, in regard to whether, in responding to acute and immediateneeds, they take the longer term into account’.

Sustainable Development

Development meets the needs of the present without compromising the ability of future generations to meet their own needs.

Tsunami

Seismic sea waves (mistakenly called "tidal waves"), which are a series of enormous waves created by an underwater disturbance such as an earthquake, landslide, volcanic eruption, or meteorite. A tsunami can move hundreds of miles per hour in the openocean and smash into land with waves as high as 100 feet or more.

Voluntary Agencies

These are non-governmental agencies or organisations that exist in many countries throughout the world. Some possess personnel trained to assist when disaster strikes. Some volags have capabilities that extend from the local to national and international levels.

Vulnerability

The conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact ofhazards. For positive factors, which increase the ability of people to cope with hazards.

4.0 CONCLUSION

Emergenciesand disasters are words we know and they connote catastrophe, crisis, tragedy, calamity, predicament and crunch. Emergencies and disasters can occur anywhere in the world. While emergencies are situations due to disasters, disasters are events that occur due to bioterrorist attack, a chemical or radiological incident, a flood or a tornado in which people or property become vulnerable, with resulting injuries or illness, combined with potential damage to property and livelihoods. A disaster overwhelms the affected community and requires outside assistance. Regardless of which agencies are available and capable of responding, communication and coordination among all local, state and federal agency professionals will be crucial to prevent confusion, miscommunication, and duplication of efforts throughout the response so as to reduce the vulnerability of communities to hazards and increase their ability to withstand disruption and to recover rapidly.

5.0 SUMMARY

In this unit, we have looked at the origin of the word emergency and its meaning. We have as well looked at emergency which is a Latin word and means to rise out or move up, dive, or plunge. The word has also been defined but the precise definition depends on the agencies involved and the procedures used, and this varies by jurisdiction. On disaster, we agree that there have been various definitionsby scholars, practitioners and disasters victims. Despitedifferent definitions on the term, one common denominator that seems to be paramount is that disaster connotes negative event leading to suffering and destruction. In this wise, we note that the words emergencies and disastersare words we are very familiar with and which we use interchangeably. The concept of both words refers to catastrophe, crisis, tragedy, calamity, predicament and crunch. Whenever there are emergencies and disasters, there are also environmental hazards. These hazards can always be a threat to human health because of the disruption of properly working systems such as damage to solid waste handling structures, leading to contamination of soil, water and food thereby exposing people to disease-causing agents such as bacteria, viruses, etc.

6.0 TUTOR-MARKED ASSIGNMENT

i. Explain the concept of emergency and disaster?
ii. Define the following:-**Preparedness, disaster risk reduction**

7.0 REFERENCES/FURTHER READING

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UNIT2 TYPES, CAUSES AND EFFECTS OF EMERGENCIES AND DISASTERS

CONTENTS

1.0 INTRODUCTION

In many discussions about emergencies and disasters, a common assertion is that it is the disaster that gives rise to the emergency, but more often than not, these terms are used inter changeably. Emergencies and disasters arise out of the complex events and occurrences in which the affected community's ability to cope has been overwhelmed, and where rapid and effective action is required to prevent further loss of life and livelihood. Disaster and emergency may be natural or man-made, and can occur anytime, anywhere, and in any magnitude. This unit covers the types, causes and effects of emergencies and disasters.

2.0 OBJECTIVES

At the end of this unit students should be able to:

- identify the types of emergencies and disasters
- describe the causes of emergencies and disasters
- explain the effects of emergencies and disasters.

3.0 MAIN CONTENT

3.1 Types of Emergency and Disaster

Disasters are commonly categorised by their origin (http://www.circl.pitt.edu); natural or man-made. Most disasters investigated in the literature are natural disasters. Recently, however, industrial accidents have been categorised as disasters. The Bhopal gas

release and the Chernobyl nuclear accident are two examples of a man-made disaster. Forest fires (initiated by man) may be another example.

Natural Disasters and Emergencies

These are disasters or emergencies due to natural causes. They include the following: earthquakes, volcanoes, landslides, tornado, hurricane, heat wave, drought, floods, sea level changes such as tsunamis, and tornadoes. Biological event are another type of natural disaster. These include (http://wedc.lboro.ac.uk) insect plagues, disease epidemics. In turn these natural events may trigger: avalanches (snow slides); excessive erosion, wildfires; and crop failure.

Man-Made Disasters and Emergencies

These are disasters or emergencies that happen due to man's activity in the environment. Recently, however, technological disasters have been included in the category. The Bhopal gas release and the Chernobyl nuclear accident are two examples of a man-made disaster. Forest fires (initiated by man) may be another example. Other examples include (Aniefiok Moses, 2011):- oil spillage, conflict, fire outbreak, indoor air pollution, road traffic accident (RTA), water pollution in relation to heavy metals and toxic elements, and deforestation:

3.2 Causes of Emergency and Disaster

There are several factors which have been linked to the risk for disaster occurrence or the risk for heightened mortality in the event of a disaster. One such factor is the environment. Anecdotal evidence (http://www.circl.pitt.edu), suggests that changes in the environment may have an impact on disasters. To make this point clearer, let us classify this into natural and man-made causes and discuss them below.

Natural causes of disaster and emergency

Climate change is a major challenge facing mankind today according to recent information (Aniefiok Moses, 2011). Climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity. A significant change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods, which is able to cause disequilibrium in the ecosystem, effecting health, agriculture, water supply, and causing flooding, drought, etc. About 1,800 million years ago, there was no oxygen in the atmosphere, and as such there was no layer of ozone – the blanket that screen out ultraviolet radiation from

reaching the earth surface in great quantity (Aniefiok Moses, 2011). But as oxygen become available in large quantity and spread in the atmosphere, ozone began to form by the action of ultraviolet light on ordinary oxygen. The great phenomenon is quite significant to the survival of all living things on the earth surface. Once sufficient ozone existed, the ultraviolet light could no longer penetrate to the surface and with the surface waters and their rich sunlight now open to colonisation, photosynthesis could speed up still further, soon establishing atmosphere rich oxygen. This happened about the geological period called *Cainozoic* about 67 million years ago following the extinction of dinosaurs. (Aniefiok Moses, 2011).

Today, there seem to be a balance between living and non-living part of the whole world system, with the origin of life depending entirely on the physical conditions prevailing early in the development of the earth. More than 90% of the ultraviolet (UV) radiation in the atmosphere is absorbed by the ozone layer surrounding the earth (Aniefiok Moses, 2011). Exposure to infrared rays and UV rays occurs to farmers, sailors, blacksmith wielders, blast furnace workers and metal molders, resulting in dermatitis and other health related problems. What we have now is near the pre-Cainozoic period when there was no ozone layer and even available oxygen was poisonous to living things. The effect of ozone layer depletion is causing the whole world sleepless night. The continuous negative anthropogenic activities is exposing man to greater danger, which may result in total annihilation of living being apart from the great consequences in form of natural disasters.

Ozone is continuously produced and destroyed in the atmosphere through complex photochemical reactions. In the absence of human interference the balance between production and destruction results in a constant amount of atmospheric ozone around the globe. The amount though appear to be minor in quantity, but plays a significant role in absorbing part of the biologically damaging fraction of the ultraviolet rays coming from the sun, thus shielding the earth from major radiation (Aniefiok Moses, 2011).

Reduction in greenhouse gas emission is a global challenge. Under the framework convention on climate change, industrial countries committed themselves to the aim of holding their emission of greenhouse gases at or below the 1990 level in the year 2000. While watching to see the level of implementation of this commitment, emissions soared in the developing countries in the first half of the 1990s, driving the global figure upward. Between 1990 and 1995, annual fossil-fuel-related emissions of carbon, which produce carbon dioxide – the leading greenhouse gas, rose by 113 million tons, reaching 6 billion tons by 1995 (Aniefiok Moses, 2011). China's CO_2 emissions

rose by 13% between 1990 and 1994, that of Brazil – 16%, India – 24 and South Korea – 44%. The annual per capita emissions of carbon dioxide from fossil fuels range from 5.3 tons in the USA to 2.4 tons in Japan and 0.2 tons in India (Aniefiok Moses, 2011). The emission of CFCs is falling as a result of efforts to protect the ozone layer and the trends that other greenhouse gases are difficult to track. The issue here is that as human activities continue to increase the level of emission of these gases into the atmosphere, there will be dislocation in the ecosystem, which would automatically lead to disasters and emergencies even in countries with low level of emission. The reason for reflecting in details about climate change is its significant role in the current and future occurrence of disaster in our environment if the situation is not checked

Underground movement which affects the earth crust is continually affected by internal forces, resulting in rapid and discernible movement of the rocks, known generally as earthquakes and the slow and large scale continent – or mountain-building movement perhaps of millions of years' duration. There are two groups of forces which cause the earth to move. First involve forces which act vertically, that are radially, either upward or downward along a radius from the centre of the earth to the surface, usually on large scale, called *epeirogenic* –meaning continent

The second comprises those forces which operate horizontally, at a tangent to the earth surface, involving both compression and tension in the crust, with resulting strains and stresses in the rocks themselves. These types of forces produced the great folded range of mountains, hence the term *orogenic* – meaning mountain. The earth movement is capable of causing earthquakes, landslides and other natural disasters.

Causes of Man-made Disasters and Emergencies

Deforestation is an example of man's activity in the environment. According to report (http://www.circl.pitt.edu), deforestation increases the risk for landslides and soil erosion. Some believe that deforestation on the hillsides of Central America contributed to the disaster from Hurricane Mitch in 1998. Another example is the increase in consumption of fossil fuels with industrialisation. Global climate change from the build-up of greenhouse gases may lead to a greater frequency of extreme weather events (heat waves) in the future, as well as sea level rise. Several existing coastlines may be threatened in this event.

Another factor related to disasters is the level of economic development. As noted (http://www.circl.pitt.edu), the greatest degree of mortality and morbidity from disasters occur in lesser developed countries. From a human or economic perspective, the degree of calamity associated with

a disaster will be associated with the population density of the area affected and the level of vulnerability in that area.

Major disasters have had a serious impact on the migration of population and related health problems. According to (Aniefiok Moses, 2011), more than 20 million refugees and about 30 million internally displaced persons (IDPs) are struggling for minimum vital health needs, adding to the toll of many millions who lack basic health services, no access to safe drinking water and basic hygiene/ sanitation, and equally suffer malnutrition and disease epidemic. The Department of Humanitarian Affairs in the UN has registered a 35% rise in the number of complex emergencies between 1991 and 1993, and these figures are estimated to have raised two folds by the end of 2007.

Emergencies, according to (Aniefiok Moses, 2011), especially those that occur in nature, only become catastrophic events when they combine with vulnerability factors, such as human settlement and population density. For instance, an earthquake occurring in a deserted area would be considered a natural hazard; but if it occurred in a megacity, it would be recognisedas major disaster. Hazards that can result in emergencies must not be overlooked when population issues are being considered. Equally, it would be wrong to neglect the population dimension of emergency management. Issues on disasters and population are therefore best approached in an integrated fashion and with proper regard to the cycle from relief to development.

Accidents globally, deaths and injuries resulting from road traffic crashes are major and growing public health problem(Aniefiok Moses, 2011). Over 20 million people are severely injured or killed on the world's road each year, with greatest burden on low income countries. Severally factors are attributable to road traffic accidents. Topmost among them is human factor. Even when all other factors seem to be right, human behaviour on the road leaves much to be desired. This couple with other factors like bad roads, inadequate road marking and road signs etc., that contribute to significant death toll on our road, which also count as one of the major emergencies in our society.

On disease epidemics70-80% of illnesses are related to water contamination and poor sanitation (Aniefiok Moses, 2011). Majority of people still practice indiscriminate open field defecation, which lead to wide spread soil pollution in villages and urban slums, especially in camps and make-shift settlements created during emergencies. A humanexcreta which contains pathogenic organisms pollutes soil and drinking water, sometimes resulting into epidemic of diseases. Meningococcal disease, which is endemic in the African meningitis belt often occur in epidemic proportion, with great toll on human lives. The

highest number of cases and the highest burden of this disease occur in sub-Saharan African in the meningitis belt. Avian Influenza outbreak, first reported in Vietnam in 2005(Aniefiok Moses, 2011), triggered off global emergency, which quickly spread to many other parts of the world including Nigeria. In 2006, the disease was report in poultry farms in Kaduna, Kano, and Plateau States and FCT. The outbreak sent shriveling along the spine of all concern. The Council, Environmental Health Officers Registration Council of Nigeria (EHORECON), organized a press conference, where the chairman then called on all EHOs to take active part in the control of the epidemic to prevent human case. This was followed with a press release by the Council. The outbreak was controlled with only 2 human cases reported so far(Aniefiok Moses, 2011). The occurrence of disease outbreak especially in resource constraint society like ours could result in a major disaster as often witnessed in Nigeria.

Indoor air pollution according to information (Aniefiok Moses, 2011); affect about 2.5 billion people, almost all in developing countries. This number suffers from high levels of indoor pollution, which is most common in rural areas and urban slums. The problem of indoor air pollution is usually compounded in emergency situation. It has been estimated that urban indoor air pollution kills about 6 million people annually. The major factor exacerbating the problem of indoor air pollution is the use of biomass and fossil fuel for cooking. It is estimated that about 80% of households in China, India and sub-Sahara Africa use biomass for cooking. This fuel, which do not burn completely emit smoke directly inside the poorly ventilated dwellings releasing carbon monoxide, oxides of nitrogen and sulfur, hydro-carbons, aldehydes, benzene, denol, cresol, toluene and more complex hydro-carbon compounds like polyaromatic hydro-carbon monoxide. Good indoor air quality is essential for the promotion of good health in every community (Aniefiok Moses, 2011). In recent time, there have been reports of carbon monoxide poisoning as a result of inhalation of gases from generating sets kept in an enclosed compartment in living rooms. Apart from such isolated cases, indoor air pollution is capable of causing major disaster in communities.The health problems associated with indoor air pollution include (Aniefiok Moses, 2011):- sulfur dioxide and particulate suspended matters (soot, ask, smoke fumes, mist and spray).Photochemical oxidants (secondary pollutants like ozone) due to heavy emission of oxide of nitrogen from road vehicles, which combines with atmospheric oxygen in the presence of sunlight also cause health problem. Pollutants from inorganic metals such as arsenic, asbestos, beryllium, cadmium, hydrogen sulfide, lead and mercury are problems.Respiratory problems, Chronic lung diseases, Carbon dioxide and chlorofluorocarbon (CFC) can build up greenhouse gases in the atmosphere leading to global warming, which may lead to heat stroke,

heat exhaustion, heat cramps, prickly heat and heat stress; changes in rainfall, droughts, desertification and poor agricultural yield.

SELF–ASSESSMENT EXERCISE

i. List and write notes on the types of disaster and emergencies.
ii. Discuss the two causes of emergencies and disasters you know.

3.3 Effects of Emergencies and Disasters

Emergencies and disasters according to recent information (Commonwealth of Australia, 2011; PAHO, 2000) —whether caused by the extremes of nature, failures of essential services or technology, exotic diseases, insect infestations, acts of violence, human action or any other cause—disrupt communities and cause not only widespread death, but also massive social disruption and outbreaks of epidemic disease and famine, leaving survivors entirely dependent on outside relief. The impacts of disasters can be complex and need to be well understood to enable the effective provision of recovery services to be focused in the following areas (referred to as environments) in order to support individuals and communities to manage their own recovery (Commonwealth of Australia, 2011);

- Social environment;
- Built environment;
- Economic environment;
- Natural environment.

Effects of disaster and Emergency on the Social Environment

Social wellbeing results when the essential needs of the populace are met. Generally speaking, social wellbeing occurs when income levels are sufficient to cover basic needs, where there is easy access to social, medical and educational services, and where people are treated with dignity and consideration. Many attempts have been made to quantify social wellbeing. Seven indicators may be used (Commonwealth of Australia, 2011):

- Wealth
- Employment
- Amenity
- Health
- Social issues
- Social belonging
- Recreation and leisure.

Disasters can impact upon all these aspects of social wellbeing and can degrade quality of life and undermine the social quality of the community. Impacts on the social environment include the disappearance of much of what was once considered routine—from simple, everyday things to the loss of the communication network that you are familiar with, such as walking down the street and talking to people. These impacts are often intangible. Social structures such as faith groups, educational facilities, networks and relationships, childcare, service groups, Rotary and Lions groups, non-government organisations, neighbourhood centres and health facilities can all be disrupted.

It is quite common to hear many individuals raise the issue of an increased health risk especially for communicable diseases following a disaster. Certainly, the environment may be right for a disease outbreak to occur (http://www.circl.pitt.edu), however, several reports suggest that this risk is generally over-estimated. In this unit, we will consider social environment impacts in terms of health problems common to all disasters including immediate health problems related to the type of disaster.

3.4 Problems Common to All Natural Disasters

- **Social Reactions**

After a major natural disaster according to information (PAHO, 2000), behaviour only rarely reaches generalized panic or stunned waiting. Spontaneous yet highly organized individual action accrues as survivors rapidly recover from their initial shock and set about purposefully to achieve clear personal ends. Earthquake survivors often begin search and rescue activities minutes after an impact and within hours may have organized themselves into groups to transport the injured to medical posts. Actively antisocial behaviour such as widespread looting occurs only in exceptional circumstances. Although everyone thinks his or her spontaneous reactions are entirely rational, they may be detrimental to the community's higher interests (PAHO, 2000). A person's conflicting roles as family head and health official, for instance, have in some instances resulted in key relief personnel not reporting to duty until their relatives and property are safe. Rumors abound, particularly of epidemics. As a result, considerable pressure may be put on the authorities to undertake emergency humanitarian work such as mass vaccinations against typhoid or cholera, without sound medical justification. In addition, people may be reluctant to submit to measures that the authorities think necessary. During warning periods, or after the occurrence of natural disasters, people are reluctant to evacuate, even if their homes are likely to be or have been destroyed. These patterns of

behaviour have two major implications for those making decisions about humanitarian programmes (PAHO, 2000). First, patterns of behaviour and demands for emergency assistance can be limited and modified by keeping the population informed and by obtaining necessary information before embarking on extended relief programmes. Second, the population itself will provide most rescue and first aid, take the injured to hospitals if they are accessible, build temporary shelters, and carry out other essential tasks. Additional resources should, therefore, be directed toward meeting the needs that survivors themselves cannot meet on their own.

- **Communicable Diseases**

Natural disasters do not usually result in massive outbreaks of infectious disease, although in certain circumstances they do increase the potential for disease transmission (PAHO, 2000). In the short−term, the most frequently observed increases in disease incidence are caused by fecal contamination of water and food; hence, such diseases are mainly enteric. The risk of epidemic outbreaks of communicable diseases is proportional to population density and displacement. These conditions increase the pressure on water and food supplies and the risk of contamination (as in refugee camps), the disruption of preexisting sanitation services such as piped water and sewage, and the failure to maintain or restore normal public health programmes in the immediate post−disaster period. In the longer term, an increase in vector−borne diseases occurs in some areas because of disruption of vector control efforts, particularly following heavy rains and floods. Residual insecticides may be washed away from buildings and the number of mosquito breeding sites may increase. Moreover, displacement of wild or domesticated animals near human settlements brings additional risk of zoonotic infections. In complex disasters where malnutrition, overcrowding, and lack of the most basic sanitation are common, catastrophic outbreaks of gastroenteritis (caused by cholera or other diseases) have occurred, as in Rwanda/Zaire in 1994 (PAHO, 2000).

- **Population Displacements**

When large, spontaneous or organized population movements occur, an urgent need to provide humanitarian assistance is created. People may move to urban areas where public services cannot cope, and the result may be an increase in morbidity and mortality. If much of the housing has been destroyed, large population movements may occur within urban areas as people seek shelter with relatives and friends. Surveys of settlements and towns around Managua, Nicaragua, following the December 1972 earthquake indicated that 80 to 90% of the 200,000 displaced persons were living with relatives and friends; 5 to 10% were

living in parks, city squares, and vacant lots; and the remainder were living in schools and other public buildings. Following the earthquake that struck Mexico City in September 1985; 72% of the 33,000 homeless found shelters in areas close to their destroyed dwellings (PAHO, 2000). In internal conflicts, such as occurred in Central America (1980s) or Colombia (1990s), refugees and internally displaced populations are likely to persist.

- **Climatic Exposure**

The health hazards of exposure to the elements are not great, even after disasters in temperate climates. As long as the population is dry, reasonably well clothed, and able to find windbreaks, death from exposure does not appear to be a major risk in Latin America and the Caribbean (PAHO, 2000). The need to provide emergency shelter therefore varies greatly with local conditions.

- **Food and Nutrition**

Food shortages in the immediate aftermath may arise in two ways (PAHO, 2000). Food stock destruction within the disaster area may reduce the absolute amount of food available, or disruption of distribution systems may curtail access to food, even if there is no absolute shortage. Generalised food shortages severe enough to cause nutritional problems do not occur after earthquakes (PAHO, 2000). Flooding and sea surges often damage household food stocks and crops, disrupt distribution, and cause major local shortages. Food distribution, at least in the short term, is often a major and urgent need, but large−scale importation/donation of food is not usually necessary (PAHO, 2000). In extended droughts, such as those occurring in Africa or in complex disasters, the homeless and refugees may be completely dependent on outside sources for food supplies for varying periods of time. Depending on the nutritional condition of these populations, especially of more vulnerable groups such as pregnant or lactating women, children, and the elderly, it may be necessary to institute emergency feeding programmes (PAHO, 2000).

- **Water Supply and Sanitation**

Drinking water supply and sewerage systems are particularly vulnerable to natural hazards and the disruptions that occur in them pose a serious health risk (PAHO, 2000). The systems are extensive, often in disrepair, and are exposed to a variety of hazards. Deficiencies in established amounts and quality of potable water and difficulties in the disposal of excreta and other wastes result in the deterioration of sanitation,

contributing to conditions favourable to the spread of enteric and other diseases.

- **Mental Health**

Anxiety, neuroses, and depression are not major, acute public health problems immediately following disasters, and family and neighbours in rural or traditional societies can deal with them temporarily. A group at high risk, however, seems to be the humanitarian volunteers or workers themselves. Wherever possible, efforts should be made to preserve family and community social structures. The indiscriminate use of sedatives and tranquilizers during the emergency relief phase is strongly discouraged. In industrialized or metropolitan areas in developing countries, mental health problems are reported to be significant during long−term rehabilitation and reconstruction and need to be dealt with during that phase.

- **Damage to the Health Infrastructure**

Natural disasters can cause serious damage to health facilities and water supply and sewage systems, having a direct impact on the health of the population dependent on these services (PAHO, 2000). In the case of structurally unsafe hospitals and health centres, natural disasters jeopardize the lives of occupants of the buildings, and limit the capacity to provide health services to disaster victims. The earthquake that struck Mexico City in 1985 resulted in the collapse of 13 hospitals (PAHO, 2000). In just three of those buildings, 866 people died, 100 of whom were health personnel. Nearly 6,000 hospital beds were lost in the metropolitan facilities. As a result of Hurricane Mitch in 1998, the water supply systems of 23 hospitals in Honduras were damaged or destroyed, and 123 health centres were affected. Peru reported that nearly 10% of the country's health facilities suffered damage as a result of El Niño events in 1997−1998 (PAHO, 2000).

Immediate Health Problems Related to the Type of Disaster

- **Earthquakes**

Usually because of dwelling destruction, earthquakes may cause many deaths and injure large numbers of people. The toll depends mostly on three factors (PAHO, 2000). The first factor is housing type. Houses built of adobe, dry-stone, or unreinforced masonry, even if only a single story high, are highly unstable and their collapse causes many deaths and injuries. Lighter forms of construction, especially wood−frame, have proved much less dangerous. After the 1976 earthquake in Guatemala, for example, a survey showed that in one village with a

population of 1,577, all of those killed (78) and severely injured had been in adobe buildings, whereas all residents of wood frame buildings survived. In the earthquake affecting the villages of Aiquile and Totora in Bolivia in 1998, 90% of deaths resulted from the collapse of adobe housing. The second factor is the time of day at which the earthquake occurs. Night occurrence was particularly lethal in the earthquakes in Guatemala (1976) and Bolivia (1998), where most damage occurred in adobe houses. In urban areas with well−constructed housing but weak school or office structures, earthquakes occurring during the day result in higher death rates. This was the case in the 1997 earthquake that struck the towns of Cumaná and Cariaco, Venezuela. In Cumaná an office building collapsed, and in Cariaco two schools collapsed, accounting for most of the dead and injured. The last factor is population density: the total number of deaths and injuries is likely to be much higher in densely populated areas. There are large variations within disaster−affected areas. Mortality of up to 85% occasionally may occur close to the epicenter of the earthquake. The ratio of dead to injured decreases as the distance from the epicenter increases. Some age groups are more affected than others; fit adults are spared more than small children and the elderly, who are less able to protect themselves. However, 72% of the deaths resulting from collapsed buildings in the 1985 Mexico earthquake were among persons between the ages of 15 and 64. Secondary disasters may occur after earthquakes and increase the number of casualties requiring medical attention. Historically, the greatest risk is from fire, although in recent decades, post−earthquake fires causing mass casualties have been uncommon. However, in the aftermath of the earthquake that hit Kobe, Japan, in 1995, over 150 fires occurred (PAHO, 2000). Some 500 deaths were attributed to fires, and approximately 6,900 structures were damaged. Fire−fighting efforts were hindered because streets were blocked by collapsed buildings and debris, and the water system was severely damaged.

- **Destructive Winds**

Unless they are complicated by secondary disasters such as the floods or sea surges often associated with them, destructive winds cause relatively few deaths and injuries (PAHO, 2000). Effective warning before such windstorms will limit morbidity and mortality, and most injuries will be relatively minor. Most of the public health consequences from hurricanes and tropical storms result from torrential rains and floods, rather than wind damage. The catastrophic death toll − an estimated 10,000 − in Central American countries after Hurricane Mitch in 1998 was primarily caused by flooding and mudslides (PAHO, 2000).

- **Flash Floods, Sea Surges, and Tsunamis**

These phenomena may cause many deaths, but leave relatively few severely injured in their wake (PAHO, 2000). Deaths result mainly from drowning and are most common among the weakest members of the population. More than 50% of the deaths in Nicaragua following Hurricane Mitch in 1998 were due to flash floods and mudslides on the slopes of the Casitas Volcano. Volcanoes are found worldwide and significant numbers of people often live in close proximity to them. The fertile volcanic soil is good for agriculture and is attractive for the establishment of towns and villages (PAHO, 2000). In addition, volcanoes have long periods of inactivity, and some generations have no experience with volcanic eruptions, thereby encouraging the population to feel some degree of security in spite of the danger in living close to a volcano. The difficulty in predicting a volcanic eruption compounds the situation. Volcanic eruptions affect the population and infrastructure in many ways (PAHO, 2000). Immediate trauma injuries may be caused if there is contact with volcanic material. The super−heated ash, gases, rocks, and magma can cause bums severe enough to kill immediately. Falling rocks and boulders also can result in broken bones and other crush−type injuries. Breathing the gases and fumes can cause respiratory distress. Health facilities and other infrastructure can be destroyed in minutes if they lie in the path of pyroclastic flows and lahars (mudflows containing volcanic debris). Accumulated ash on roofs can greatly increase the risk of collapse. Contamination of the environment (e.g., water and food) with volcanic ash also can disrupt environmental health conditions; this effect is compounded when the population must be evacuated and housed in temporary shelters. If the eruptive phase is prolonged, as in the case on the Caribbean island of Montserrat where the Soufriere Hills volcano began erupting in July 1995 and continued for several years, other health effects, such as increased stress and anxiety in the remaining population, become important (PAHO, 2000). Long−term inhalation of silica−rich ash also can result in pulmonary silicosis years later. One of the most devastating events to occur in Latin America was the November 1985 eruption of the Nevadodel Ruiz volcano in Colombia. The heat and seismic forces melted a portion of the icecap on the volcano, resulting in an extensive lahar that buried the city of Armero, killing 23,000 people and injuring 1,224. Some 1,000 km2 of prime agricultural land at the base of the volcano were affected (PAHO, 2000).

- **Floods**

Slow−onset flooding causes limited immediate morbidity and mortality. A slight increase in deaths from venomous snakebites has been reported, but not fully substantiated (PAHO, 2000). Traumatic injuries caused by

flooding are few and require only limited medical attention. While flooding may not result in an increased frequency of disease, it does have the potential to spark communicable disease outbreaks because of the interruption of basic public health services and the overall deterioration of living conditions. This is of concern particularly when flooding is prolonged, as in the case of events caused by the El Niño phenomenon in 1997 and 1998 (PAHO, 2000).

- **Landslides**

Landslides have become an increasingly common disaster in Latin America and the Caribbean; intense deforestation, soil erosion, and construction of human settlements in landslide−prone areas have resulted in catastrophic events in recent years (PAHO, 2000). This has been the case in both urban and rural areas. Rain brought by Tropical Storm Bret triggered landslides in poor neighborhoods on the outskirts of Caracas, Venezuela, in August 1993. At least 100 people died, and 5,000 were left homeless. High death tolls occurred in the gold mining town of Llipi, Bolivia, in 1992, where a landslide buried the entire village, killing 49. Deforestation contributed significantly to the disaster, and mining tunnels collapsed. A similar disaster occurred in the gold mining region of Nambija, Ecuador, in 1993, claiming 140 lives. In general, this phenomenon causes high mortality, although injuries are few. If there are health structures (hospitals, health centres, water systems) in the path of the landslide, they can be severely damaged or destroyed (PAHO, 2000).

Effects on the built environment

The effects of a disaster on the built environment depend on the disaster type, scale, magnitude, duration and location of impact. Within the built environment, impacts may include (Commonwealth of Australia, 2011):

- Loss of essential services, power, water, food, fuel, sewerage, gas, communications, internet
- Loss of community infrastructure; for example, public buildings, schools, hospitals, iconic buildings
- Loss/damage/disruption of transport services (for example, roads, air, marine and rail transport infrastructure, facilities and assets), which has a flow-on effect on the movement of people and goods, and on transport and traffic management on transport networks (for example, road and rail closures, detours, vehicle permits and regulatory services, passenger transport, road traffic management systems)
- Loss of property (residential, rural, industrial, public).

3.5 Effects on the Economic Environment

The effects of disaster on the economic environment can be classified in terms of direct and indirect impacts—that is, those that are tangible and can normally have a dollar value easily assigned, and those that are intangible. Impacts on the economic environment may include (Commonwealth of Australia, 2011):

- Loss of livelihoods, Disequilibrium, disorientation of service providers (disasters are not a usual method of doing business)
- Reduction in cash flow for some small businesses, and injection of funds into others
- Loss of tourism activities
- Loss of employment opportunities for some people, and creation of employment opportunities for others
- The impact of donated goods and services on local economies.

4.0 CONCLUSION

We have known from what we have read that disaster and emergency are a big issue and have to be looked at on the basis of types, causes and effects. However, the bigger issue is that disasters may impact on all aspects of a community. The range of impacts of disasters on a community can be described across the social, built, economic and natural environments. The four environments are mainly separations for the purpose of functional responsibilities within recovery—when working with communities in recovery each environment should be coordinated with all others. The importance of supporting the social functioning of a community is fundamental to the implementation of recovery activities in all other environments, and to supporting the foundations of community sustainability. This focus on the impact of disasters upon communities recognises that human beings do not function separately but as social groups with interdependence. Individuals are intrinsically connected to their community in conscious and subconscious ways through collective economic, emotional, physical, spiritual, environmental and cultural issues. So although the impact upon individuals and households needs to be understood and addressed, it is equally important to understand the impact and disruption to the social capital and connectedness of communities and the need to support the restoration of communities to a functioning state.

5.0 SUMMARY

Disaster and emergency may be natural or man-made, and can occur anytime, anywhere, and in any magnitude. Disasters are commonly categorised by their origin - natural or man-made and recently, industrial

accidents have been categorised as disasters and this suggests that changes in the environment may have an impact on disasters. The causes of disaster have also been classified into natural and man-made causes and discuss. While natural causes look at underground movement which affects the earth crust, resulting in rapid and discernible movement of the rocks, known generally as earthquakes, man-made causes look at man's activity in the environment. According to report (http://www.circl.pitt.edu), man-made activities such as deforestation increase the risk for landslides and soil erosion. Other activities include global climate change from the build-up of greenhouse gases, human or economic perspective associated with the population density of the area affected and the level of vulnerability in that area. The effects of emergency and disaster have also been discussed in this unit. The impacts of disasters can be complex and have been looked at in the following environments in order to enable the effective provision of recovery services. The following areas (referred to as environments) are; Social environment; Built environment; Economic environment; Natural environment. In between these environments, the health problems common to all disasters and emergencies have been discusses and they include; social reaction, communicable diseases, population displacement, climate exposure, food and nutrition, water supply and sanitation, etc.

6.0 TUTOR-MARKED ASSIGNMENT

1. Enumerate the areas in man's environment that emergency and disaster would impact.
2. Describe the health problems common to all emergencies and disasters.

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UNIT 3 SCOPE OF ENVIRONMENTAL HEALTH SERVICES IN EMERGENCY SITUATIONS

CONTENTS

1.0 INTRODUCTION

The scope or room to act in environmental health services in emergency situations should be such that will enable us to attain the success we desire. To do this therefore, an integrated (make into whole) approach must be adopted in the management of emergencies and disasters. By so doing, there would be a continuous chain of activities that will include hazard prevention, preparedness, emergency response, relief and recovery, including activities to reconstruct infrastructure and rehabilitate shattered lives and livelihoods. This will bring us into what we call a disaster-management cycle. This cycle consists of connected activities and phases, some of which occur simultaneously (at the same time). According to World Health Organisation, (WHO 2002), the major phases when a disaster and emergencies happen are as follows:-

- Planning, prevention, preparedness and mitigation
- Emergency response
- Recovery, rehabilitation and reconstruction to promote sustainable development

Working in an emergency based on the phases outlined above will result in actions that are responsive to local needs, provide a supportive framework (principles) for improvisation by front-line workers in meeting those needs, and will allow all phases of the emergency-management cycle to be improved as lessons are learned. In this unit we are going to try to enlighten us more about the disaster-management cycle and how we can work in an emergency using the cycle.

2.0 OBJECTIVES

At the end of this unit, should be able to:

- describe the disaster-management cycle
- identify appropriate actions to be taken at all points in the cycle
- differentiate the relationship between disaster management and development
- discuss the steps in disaster management

3.0 MAIN CONTENT

3.1 Disaster Management Cycle

Mitigation

The disaster-management cycle (Fig 1 below) is the cycle that allows us to work in a systematic way when we are faced with a disaster or an emergency. The disaster-management cycle is made up of phases which enables appropriate actions at all points in the cycle leading to greater preparedness, better warnings, reduced vulnerability or the prevention of disasters during the next iteration (the act of doing something again) of the cycle. In disasters or emergencies, where humanitarian action and development processes were not properly organised, it can lead to increased vulnerability to disasters and loss of preparedness for emergency situations.

WHO (2002) reports that the disaster-management cycle can be entered at any point and that is why many governments and institutions focus their attention on the steps to take when disaster strikes. These include initial rapid assessment, search and rescue, and emergency relief to stabilize the situation, followed swiftly by more detailed damage, needs and capacities assessment, leading to short-term interventions to safeguard life, health and livelihoods in the medium term.

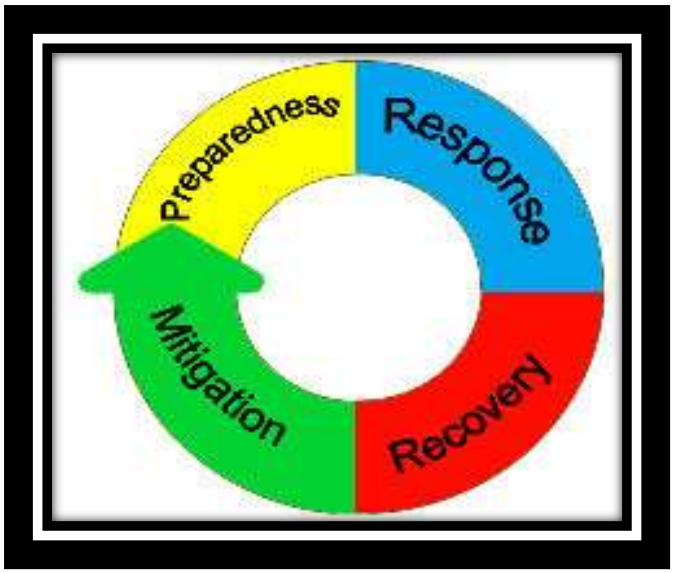

Fig. 1: Graphic Representation of Disaster Management-Cycle

Source - State of Georgia Department of Public Health and Environmental Health (2011)

Haddow, George D.; Jane, A. Bullock (2003), opines that mitigation is a time when efforts are made to prevent hazards from developing into disasters altogether or to reduce the effects of disasters. Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. This is achieved through risk analysis (identify possible risks), which results in information that provides a foundation for mitigation activities that reduce risk, and help protect financial investment. The mitigation phase differs from the other phases in that it focuses on long-term measures for reducing or eliminating risk. Mitigation is the most cost-efficient method for reducing the effect of hazards (Lindell, M., Prater, C., and Perry, R., 2006). Mitigation includes providing regulations regarding evacuation, sanctions against those who refuse to obey the regulations (such as mandatory evacuations), and communication of risks to the public.

Preparedness

Preparedness on the other hand is how we change behaviour to limit the impact of disaster events on people. (Drabek, Thomas E, 1986), reports that preparedness is a continuous cycle of planning, managing, organising, training, equipping, exercising, creating, evaluating, monitoring and improving activities to ensure effective coordination and the enhancement of capabilities of concerned organisationsto prevent, protect against, respond to, recover from, create resources and mitigate the effects of natural disasters, acts of terrorism, and other man-made disasters. In the preparedness phase, emergency managers develop plans

of action carefully to manage and counter their risks and take action to build the necessary capabilities needed to implement such plans. The common preparedness measures according to (Paul J. Maliszewski, 2008), which the Federal Emergency Management Agency (FEMA) of America has for disaster management includes:-

- Communication plans with easily understandable terminology and methods
- Proper maintenance and training of emergency services, including mass human resources such as community emergency response teams
- Development and exercise of emergency population warning methods combined with emergency shelters and evacuation plans
- Implement and maintain an emergency communication system that can help identify the nature of an emergency and provide instructions when needed
- Stockpiling, inventory, streamline foods supplies, and maintain other disaster supplies and equipment
- Develop organisations of trained volunteers among civilian populations.

Response

This is the phase which includes the mobilisation of the necessary emergency services and first responders in the disaster area. This will include a first wave of core emergency services, such as firefighters, police and ambulance crews. A well-rehearsed emergency plan developed as part of the preparedness phase enables efficient coordination of rescue. Where required, search and rescue efforts commence at an early stage. Depending on injuries sustained by the victim, outside temperature, and victim access to air and water, the vast majority of those affected by a disaster will die within 72 hours after impact (Walker, Peter, 1991).

Recovery

In the r**ecovery** phase, the aim is to restore the affected area to its previous state. It differs from the response phase in its focus. Recovery efforts are concerned with issues and decisions that must be made after immediate needs are addressed. Recovery efforts are primarily concerned with actions that involve rebuilding destroyed property, re-employment, and the repair of other essential infrastructure (Haddow, George D.; Jane A. Bullock, 2003). According to recoveryplatform.org, efforts should be made to "build back better", aiming to reduce the pre-disaster risks inherent in the community and infrastructure. Also an important aspect of effective recovery efforts is taking advantage of a

‘window of opportunity as mentioned by (Alexander, David 2002), for the implementation of mitigative measures that might otherwise be unpopular. Citizens of the affected area are more likely to accept more mitigative changes when a recent disaster is in fresh memory.

3.2 Disaster Management and Development

Sustainable Livelihoods and Disaster Management

One of the major goals of disaster management, and one of its strongest links with development, is the promotion of sustainable livelihoods and their protection and recovery during disasters and emergencies (WHO 2002). To achieve this people who are affected by the disaster should be involved in development. In this way, people have a greater capacity to deal with disasters and their recovery is more rapid and more durable. Increasing the capacity of people to offset risk, absorb shocks and meet contingencies is important and is central to the goal of sustainable recovery (WHO 2002).

Reconstruction of a damaged area is not limited to the erection of new buildings. An integrated development process is required that should embrace the full redevelopment of the affected area according to the needs of its population. Long-term recovery from a major disaster is inevitably a slow and difficult process. No society is ever the same after a disaster, nor should it be. Disasters reveal weaknesses and deficiencies in society’s ability to protect itself, especially its more vulnerable members. Those concerned with environmental health should learn the lessons that disasters teach about the health of the population, and the resilience and responsiveness of health facilities, including water supplies and sanitation systems. They can help to draw out the more general lessons that will result in prevention, mitigation and increased preparedness.

Emergencies and disasters often provide an opportunity for new voices to be heard in society: emergent (developing) community-based organisations express the needs of disaster affected people (Anderson & Woodrow, 1989; Berke *et al.,* 1993). This new voices can become a permanent force for change and sustainable development once the emergency is over. After major disasters, countries have often introduced new legislation and established new institutions and programmes. They have also adopted building codes; regulated land use; controlled dangerous industrial processes and the transportation of toxic chemicals; provided insurance and credit for vulnerability reduction; improved early warning systems; increased preparedness; and improved the coordination of emergency response (WHO 2002).

Limitations in Complex Emergencies

Large-scale movements of people often create emergency situations. The disaster management cycle may apply to such cases, but with limitations which you will have when a handful of care-providers are confronted by a large number of people with urgent needs and the care-providers have insufficient resources to respond promptly and appropriately to prevent or mitigate secondary disasters, such as outbreaks of disease, famine and the dispersal of families. Other limitations will come when refugees and displaced people spend years away from their homes, in situations where opportunities for development are limited and complete recovery is postponed.

Also, in long-term conflicts people may suffer repeated violence and displacement, so that getting back onto any sort of development path becomes virtually impossible. However, (WHO 2002) believes that people's ability to learn from every experience would be able to help them overcome the limitations and so increase their capacity to deal with new disasters. This is what happened with Rwandan refugees on the move in eastern Democratic Republic of the Congo in 1996 and 1997, which were able to organise basic environmental health services partly because of their experience of doing so in camps for two years since leaving Rwanda in 1994.

SELF–ASSESSMENT EXERCISE

i. Explain the disaster-management cycle.
ii. Describe the major phases of disaster-management cycle.
iii. Discuss the limitations in complex emergencies.

3.3 Steps in Disaster Management

Vulnerability and Capacity Assessment (VCA)

Vulnerability and capacity assessment which can also be called hazard assessment, risk assessment or threat assessment is the process that helps us to anticipate problems that specific groups will face in the event of a disaster and during the period of recovery. The purpose of vulnerability and capacity assessment is to identify hazards and their possible effects on communities, activities or organisations, and their capacity to prevent and respond to disasters. This is a vital early stage in the disaster-management process. The process of vulnerability assessment involves determining the spatial (relating to space) proximity (closeness) of population subgroups to potential hazards, according to personal and socioeconomic characteristics that may influence the

immediate and long-term impact of hazards on them (WHO, 2002). The essential steps involved in VCA include the following (WHO, 1999):

- The ***project definition*** determines the aim, objectives, scope and context of the VCA, the tasks to be performed, and the resources needed to perform them.
- The formation of a representative ***planning group*** is essential to VCA and emergency planning. Without this group it will be difficult to gather the required information, obtain the commitment of key individuals, and allow the communities and organisations to participate.
- ***Hazard identification and description*** reveals and describes the hazards that exist in the community (although it is unlikely that all of the hazards will be discovered). The same hazards may manifest themselves differently in different areas and communities because there is an interaction between hazards, the particular community, and the environment.
- **A *community and environment description***outlines the relevant information about the people, property or environment that may affect or be affected by the hazards. More hazards may be identified at this stage. Key aspects of communities' capacity to deal with disasters are identified at this stage.
- A description of ***effects*** is an account of community vulnerability—what is likely to happen in an accident, incident, emergency or disaster involving a single hazard or multiple hazards.
- ***Hazard prioritization*** determines the hazards that should be dealt with first, and those that can be dealt with later or ignored, on the basis of their likely effects and community vulnerability.
- ***Recommendations for action*** are the link between vulnerability assessment and other emergency management activities. Planning, training and education, and monitoring and evaluation should be based firmly on the results of the vulnerability assessment.
- ***Documentation*** of all results and decisions is necessary to justify the recommendations and any further emergency prevention and preparedness work. Two key steps in this process—the identification and description of hazards and the assessment of community and organizational resilience.

3.4 Prevention and Mitigation

Complete prevention of disasters is feasible only if it is possible to eliminate people's susceptibility to hazards by moving populations away from hazard zones, providing complete protection from hazards, or preventing the physical hazard altogether. This has occasionally been

achieved, e.g. the virus responsible for smallpox was eradicated, and cities have been protected from flooding by diverting rivers to alternative courses. However, to survive or improve well-being, humans are prepared to take risks and will even resettle in areas previously affected by natural disasters. The best that can usually be done is therefore to reduce the potential impact of emergencies and disasters. Mitigation—actions aimed at reducing (but not eliminating) the impact of future hazard events—and reduction of the susceptibility of high-risk groups are then the goals. The construction of riverbank levees and upstream storage reservoirs are examples of measures for mitigating and reducing the hazard of flooding by rivers. Efforts to reduce the impact of emergencies or disasters may focus on the extreme event, the humans who are at risk of being affected, or both. For instance, the impact of flooding can also be mitigated by preserving wetlands that can absorb and spread flood waters (WHO, 2002).

Emergency Preparedness

Emergency preparedness is "a programme of long-term development activities whose goals are to strengthen the overall capacity and capability of a country to manage efficiently all types of emergency and bring about a transition from relief through recovery, and back to sustained development" (WHO, 1995). The goal of emergency-preparedness programmes is to achieve a satisfactory level of readiness to respond to any emergency situation through programmes that strengthen the technical and managerial capacity of governments, organisations, institutions and communities. Such programmes are concerned with:

- National legislation and national policy for disaster management
- Plans and procedures for disaster management and the coordination of emergency response at international, national and sub-national levels
- The strengthening of institutional and human resources for disaster management
- The establishment and management of stocks of relief supplies and equipment and the identification of transportation options
- Public education, public awareness and community participation in disaster management
- The collection, analysis and dissemination of information related to emergencies and disasters that are likely to occur in the region.

Activities in each of these areas will be needed to achieve emergency preparedness.

Planning, Policy and Capacity Building

Planning is required at all levels, from the community level to national and international levels. Programmes for disaster prevention and mitigation should be carried out according to clear objectives, with adequate resources and management arrangements. Key actors also must ensure that strategies, resources, management structures, roles and resources for emergency response and recovery are determined and understood. Effective emergency planning can only take place once roles and responsibilities have been agreed. Emergency and disaster prevention, mitigation, preparedness and response will depend on the incorporation of appropriate measures in national development planning and in the sectoral plans and programmes of the various ministries. They will also depend on the availability of information on hazards, emergency risks and the counter-measures to be taken and on the degree to which government agencies, non-governmental organisations and the general public are able to make use of this information.

The disaster-management cycle includes also the shaping of public policies and plans that either modify the causes of disasters or mitigate their effects on people, property, assets and infrastructure. Institutional capacity as well should be increased through organizational innovation and training. Experience has shown that the result can be a more resilient, less vulnerable population, with fewer disruptions of essential services, such as water and power supplies, improved early warning ability, and better advance planning for evacuations and emergency response (WHO, 2002).

Emergency Response

Appropriate response will depend on the nature of the emergency or disaster and the effectiveness of mitigation measures as well as the degree of preparedness achieved. In a crisis, the environmental health agencies are usually called upon to deal with the immediate problems. To be able to respond effectively, these agencies must have experienced leaders, trained personnel, adequate transport and logistic support, appropriate communications, and rules and guidelines for working in emergencies. If the necessary preparations have not been made, the agencies concerned will not be able to meet the immediate environmental health needs of the people. It is completely unrealistic to expect an effective response to take place spontaneously, without planning or preparation. The aim of emergency response is to provide immediate assistance to maintain life, improve health and support the morale of the affected population.

3.5 Rehabilitation, Reconstruction and Recovery

As the emergency is brought under control, the affected population is capable of undertaking a growing number of activities aimed at restoring their lives and the infrastructure that supports them. This may be a slow process and one in which the capacity for such efforts must be carefully nurtured and built up over a period of time. The process should start early in the emergency phase. Physical rehabilitation and reconstruction can sometimes take place more quickly than social or psychological rehabilitation. Both are necessary, however, if full recovery is to be attained. Essentially, the process includes the restoration of community life, the participation of the people in the recovery and development activities, and provision of the appropriate environmental health infrastructure (shelter, water supply, sanitation, etc.). There will be many opportunities during the recovery period to enhance prevention and increase preparedness, thus reducing vulnerability. Environmental health activities have an important role in recovery. They can contribute to the long-term reduction of people's vulnerability to hazards by increasing their capacity to cope with, and recover from, future disasters. Examples include the reconstruction of housing with improved local drainage and built-in roof water-catchment systems, the reconstruction of markets with adequate facilities for personal and food hygiene, and the repair and deepening of rural wells and boreholes (WHO, 2002).

4.0 CONCLUSION

I would like to conclude by saying that a fast and effective response to disaster and emergencies can be the most important factor in limiting injury to people as well as damage to property and the environment. While disaster and emergencies destroy community confidence, a well-informed, well-prepared community is better able to deal with the aftermath. Preparations for emergencies cannot be left till the last minute. There is a good deal of common sense in the dictum (statement) that when you are prepared for the worst, it never happens. This wisdom recognises, of course, that in making preparations based on the disaster-management cycle, many of the problems and poor practices out of which emergencies arise are dealt with. As United Nations Secretary-General Kofi Annan has observed, emergencies cost money; preventing them costs less. There is need therefore to have policies, procedures and processes in place related to preventing emergencies and dealing with them should they arise. This enables the appropriate deployment of skilled and specially trained resources when they can be of most assistance. It is easier to save life, protect the environment and minimize damage to property by early intervention. It is difficult to catch up when harm has been done.

5.0 SUMMARY

In this Unit we have learnt about the disaster Management Cycle. The cycle allows us to work in a systematic way when we are faced with a disaster or an emergency. The disaster-management cycle is made up of phases which enables appropriate actions at all points in the cycle leading to greater preparedness, better warnings, reduced vulnerability or the prevention of disasters during the next iteration (the act of doing something again) of the cycle. The stages are mitigation, preparedness, response and recovery and the stages can be entered at any point. We have also discussed disaster Management and Development where we agree that emergencies and disasters often provide an opportunity for new voices to be heard in society in terms of new development, The Steps in Disaster Management have also been discussed to include; vulnerability and capacity assessment, prevention and mitigation, emergency preparedness, planning, policy and capacity building, emergency response and rehabilitation, reconstruction and recovery – which contribute to the long-term reduction of people's vulnerability to hazards by increasing their capacity to cope with, and recover from, future disasters.

6.0 TUTOR-MARKED ASSIGNMENT

i. Discuss briefly the steps in disaster Management.
ii. Explain rehabilitation, reconstruction and recovery in terms of emergencies and disasters.

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MODULE 2 ENVIRONMENTAL HEALTH IN EMERGENCYAND DISASTER

Unit 1 Institutional Arrangement for Emergency Situations
Unit 2 Environmental Health Services in Emergency Situations

UNIT 1 INSTITUTIONAL ARRANGEMENT FOR EMERGENCY SITUATIONS

CONTENTS

1.0 INTRODUCTION

Work done in advance of possible emergencies and disasters is an essential aspect of disaster management. It enables a reduction in the number and severity of disasters, through prevention and mitigation, as well as improved emergency response, through preparation and planning. The pre-condition for systematic vulnerability reduction is policy development, which ensures that disaster management activities are developed within a favourable policy framework. In this unit, we shall be discussing institutional arrangement for emergency situations.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- define policy
- discuss emergency preparedness policy
- identify the issues in emergency preparedness and development policy
- describe emergency preparedness and development policy.

3.0 MAIN CONTENT

3.1 Institutional Arrangement

Policy Development for Emergency Situations

Policy is "the formal statement of a course of action" (WHO, 1999). Policy development is usually a "top-down" process, in that the central authority will prepare policy, and further decentralised policies may then be required. Policy is strategic in nature and performs the following functions:

- Establishes long-term goals
- Assigns responsibilities for achieving goals
- Establishes recommended work practices
- Determines criteria for decision-making

Policy is required to ensure that common goals are pursued within and across organisations, and that common practices are followed. Without agreed policies, efforts are fragmented, leading to lack of coordination and poor results. While policies tend to be "top-down" (that is, authorised by higher levels), implementation of the strategies that arise from a policy tends to be "bottom-up", with higher levels assisting lower levels. Policy may also be created at all administrative levels of an organisation or country. According to recent report (WHO, 2002), pre-disaster activities should be coordinated in each country at different levels by bodies that are concerned with all stages of the disaster, so that the overall goal of vulnerability reduction is pursued, and be developed in consultation with those who are required to implement it.

National and Sub-National Disaster Organisations

At all levels in the country, there should be disaster organisations for pre-disaster activities. The activities should be coordinated in each country at different levels by bodies that are concerned with all stages of the disaster, so that the overall goal of vulnerability reduction is pursued. According to recent information (WHO, 2002), at national level, national disaster organisations (that may have a variety of names and that may be constituted in a variety of ways) should have the following features;

- Provide a coherent approach to disaster management
- Serve as a common reference point for departmental activities
- Clearly allocate responsibilities
- Provide a basis for coordinated action

- Provide a setting within which to review and evaluate needs

In the same vein, the Nigeria national disaster framework (www.nema.gov.ng) says thus "There shall be National Emergency Management Agency (NEMA) at the Federal level, State Emergency Management Agency (SEMA) at the state level, and Local Emergency Management Authority (LEMA) at the local government level. This to a large extent shall strengthen the capabilities of Federal, State and Local Governments to reduce the likelihood and severity of disasters. Every tier of government shall build the capacity of their emergency management institution to prepare for, prevent against, respond to and recover from disaster events. Federal State and Local Government, relevant Ministries, Departments and Agencies (MDAs), the military, police, para-military and Civil Society Organisations (CSOs) shall develop their capacities in disaster management. Community institutions shall acquire disaster management capabilities as first responders, and Emergency Management Volunteers (EMV) shall be established to compliment the organised structures. Disaster Response Units (DRUs) shall be established in different military formations across the country to provide assistance to civil authority during emergencies".

3.2 Emergency Preparedness Policy

This policy is usually very important at national, provincial/district and local levels to ensure that common goals are set and common approaches are used. According to the World Health Organisation, (WHO, 2002), without a shared disaster management policy that applies to all relevant sectors and all levels, prevention, preparedness and response are likely to be fragmented, badly coordinated and ineffective. Therefore, developing and monitoring policies for disaster management requires an active process of analysis, consultation and negotiation. This process according to information (WHO, 2002), should involve consultation among a wide variety of institutions, groups and individuals. These will include nongovernmental organisations, such as the national societies of the Red Cross or Red Crescent, and several governmental bodies, such as the ministries responsible for health, security, welfare, public works, etc. The resultant policies should reflect society's definition of the limits of acceptable risk and its commitment to protecting vulnerable populations. They should also result in a clear definition of the roles and responsibilities of all the partners in emergency management.

Emergency Preparedness Policy Principles

The principle will ensure that the emergency preparedness policy will recognise the following (WHO, 1999):

- the rights of individuals and collective rights
- the nature of the hazards, community, and vulnerability in the geographical area covered by the policy
- existing related policies, including development, health, and environmental policy
- existing legislative and organisational responsibilities
- resource limitations
- accepted emergency management concepts, including: the comprehensive approach; the all-hazards approach; incorporating emergency preparedness into development planning

The principle is further collaborated by the Nigeria national disaster framework (www.nema.gov.ng) thus; "It centres on the principles of shared responsibility and the need to ensure proper integration and collaboration among stakeholders".

Emergency Preparedness Policy Form

The form of emergency preparedness policy will vary both from country to country and between provinces in a given country. Policy may consist of community agreements, sectoral or inter-sectoral agreements, a provincial government decision, a national government executive decision, or legislation. The form should, however, maximise multi-sectoral participation. It is essential to emergency preparedness that all relevant organisations and levels are consulted to ensure joint commitment to community safety and well-being. In this wise, Nigeria national disaster framework (www.nema.gov.ng) indicates that "NEMA established an in-house committee to develop a "zero document" that is holistic in nature and reflects global best practices in disaster management. This draft document served as baseline for inputs from stakeholders across the country, to ensure participation, ownership and sustainability. To find answers to questions such as:- who has responsibility over what; who has authority over what; who is going to do what; who is in charge of what; how are the jurisdictions going to work; etc. NEMA organized roundtable discussions in each of the 6 geo-political zones and at the National level to consider the zero documents. Participants were drawn from the three tiers of government; Federal, State and Local Government, MDAs; Military, Police and Para-military; CSOs; International NGOs; development partners and the private sector. The roundtable discussions generated fresh ideas, observations and recommendations that were incorporated into the NDMF".

Emergency Preparedness Policy Process

According to the World Health Organisation, (WHO, 1999), the process for emergency preparedness policy development is outlined below:

- A decision is made that policy is required and policy development is authorised
- A qualified person (with knowledge of policy development and emergency preparedness) is selected as the policy process manager.
- The policy process manager analyses the environment, culture, and administration of the area under his or her jurisdiction.
- A multi-sectoral team is selected to represent all of the organisations with an interest in emergency preparedness.
- The policy process manager and policy team consider the various emergency preparedness policy issues and document their decisions.
- The decisions on policy directions are publicised and debated in as many forums as possible
- Final decisions on policy are made and formalised by the appropriate authorities (national legislature, national executive, provincial government, etc.).
- Policy is disseminated widely.

Looking at the bullets on the process for emergency preparedness policy, the NDMF of Nigeria (www.nema.gov.ng) has this to say: - "Disaster Management is the coordination and integration of all activities necessary to build, sustain and improve the capability to prepare for, protect against, respond to and recover from threatening or actual natural or human-induced disasters. It is a multijurisdictional, multi-sectoral, multi-disciplinary and multi-resource initiative. Therefore, it is vital that the Federal, State and Local Governments, Civil Society Organisations (CSOs) and the private sector discharge their respective roles and responsibilities and complement each other in achieving shared goals of disaster management. The involvement of different actors and stakeholders in disaster management requires the existence of a coordination and collaboration mechanism. The National Disaster Management Framework (NDMF) provides this mechanism that serves as a regulatory guideline for effective and efficient disaster management in Nigeria. The framework defines measurable, flexible and adaptable coordinating structures, and aligns key roles and responsibilities of disaster management stakeholders across the nation. It describes specific authorities and best practices for managing disasters, and explains a paradigm shift in disaster management beyond mere response and recovery. The NDMF offers a holistic approach to disaster management. It serves as a legal instrument to address the need for

consistency among multiple stakeholders. It is a coherent, transparent and inclusive policy for disaster management in Nigeria. The Framework is written especially for government officials, private-sector, Civil Society Organisations, emergency management practitioners and community leaders on the need to understand the concepts and operating guidelines for disaster management in the country".

1. List the functions that emergency management policy is expected to perform.
2. Discuss the features of emergency management policy with regard to national and sub-national organisation.

3.1 Issues in Emergency Management Policy

The range of issues in disaster-management policy development and gives recommended options for addressing them are as follows (WHO, 1999):-

Emergency Preparedness and Development Planning

Options

- Do not institute emergency planning; leave the situation as it is
- Keep emergency planning and development planning separate
- Incorporate emergency planning into development planning
- Initiate separate emergency planning but coordinate it with development planning.

A national Emergency Law and other Enabling Legislation

Options

- Do not pass a new law. The country or community (or both) has survived without such legislation
- Pass a new law that deals with emergencies only
- Pass a law that deals not only with emergencies, but all hazards, including chronic as well as sudden risks, war or military situations as well as civil problems, and so on
- Keep the terms of the law short and general; do not make it long and detailed
- Define emergencies in terms of physical agents (e.g. flood, cyclone, explosion) or in terms of social effects and vulnerability (e.g. casualties, property losses, social disruption)
- Indicate gradations of emergencies; distinguish between everyday emergencies, disasters, and catastrophes. Are the differences

quantitative or qualitative or both? What is the value of these distinctions?

The National Emergency Management Organisation

Options

- Make the armed forces the national organisation responsible for emergency management
- Give the responsibility to a special policy planning group in the prime minister's office
- Increase the authority of some existing ministry (such as developmental planning or the ministry in charge of the police) to undertake emergency management
- Create a new, national-level cabinet position with emergency management responsibility
- Create a separate independent agency directly responsible to the president
- Pass a national law, but decentralise responsibility to an organisation in each of the provincial governments
- Have no national organisation, but make emergency management a "bottom-up" responsibility, to be undertaken by groups at the community and provincial levels
- Give the responsibility to an NGO already operating nationwide and emergency-oriented (e.g. the national Red Crescent or Red Cross Society).

Responsibility and Major Mission of the National Emergency Management Organisation

Options

- The organisation should be responsible for all aspects of emergency management, prevention/mitigation, preparedness, response, and recovery.
- The organisation, while responsible for all aspects of emergency management, should focus primarily on prevention/mitigation.
- The organisation should deal only with prevention/mitigation.
- Equal emphasis should be placed on structural mitigation measures (i.e. physical measures such as building dams) and non-structural mitigation measures (i.e. social measures such as training governmental officials on appropriate land use patterns or building codes).

- Emergency management should look forwards rather than backwards, concentrating on preventing and mitigating possible future emergencies rather than looking at past problems.

Tasks of the Emergency Management Organisation

Options

- The organisation should be almost exclusively an emergency planning group.
- In addition to emergency management, the organisation should have regulatory/supervisory tasks (such as ascertaining whether dams have been properly constructed or whether building inspectors have the appropriate emergency-relevant knowledge).
- The organisation should be primarily concerned with emergency planning during normal times, but should also have operational or management tasks during national emergencies.
- The organisation should have a very broad mission; it should undertake a wide variety of functions, including policy setting, planning, and provision of resources, gathering of information, monitoring, operations, and training.

Community and Provincial Emergency Preparedness

Options

- No formal attention should be paid to creating lower-level counterpart preparedness; provincial and local community governments would be responsible for this initiative.
- Only national-level entities and tasks should be discussed and decided at the present time. A decision on whether lower-level preparedness ought to be examined should be made later.
- National-level and lower-level entities and preparedness should be developed in parallel and simultaneously.
- While national-level activities should be given first priority, the national emergency legislation should set forth activities at the provincial and local community level that might be developed later.

Health Sector Preparedness

Options

- The health sector does not prepare for emergencies.
- Preparations are made for emergencies, but each part of the health sector conducts its own preparedness programme.
- Health sector preparedness is not coordinated with other sectors.
- A national emergency management cell is established in the health sector, to develop policy and standards.
- The health sector responds to emergencies at the national level only.
- The provincial level of the health sector responds to emergencies, assisted by the national level.

Involving other Groups and Citizens in Emergency Management

Options

- Others should not be formally involved.
- Only other government organisations should be involved.
- Besides the government, the private sector and NGOs should also be involved.
- There should be a selective involvement of key community officials.
- All citizens should be involved in emergency management in some way.
- All should be involved but there should be a definite sequencing for involvement in the planning process.

Managing Resources

Options

- There should be funding for institution-building and other community activities and entities relevant to emergency prevention.
- A cadre or core of specialists in emergency management should be quickly established.
- A full range of facilities and equipment (e.g. training centres, computers with appropriate software) should be provided for the emergency management organisations.

Evaluating an Emergency Preparedness and Response Programme

Options

- Set milestones and deadlines for meeting specific goals.
- Obtain feedback from citizens.
- Undertake research.
- Require periodic reports be made to the government.

Priorities in Implementing Emergency Preparedness

Options

- A systematic national emergency vulnerability assessment is the highest priority.
- A mass information or educational campaign about emergency planning is necessary and should be given early priority.
- Priorities should be set in terms of the sectors that are most important in the society.

4.0 CONCLUSION

Emergency management policy serves as a legal instrument to address the need for consistency among multiple stakeholders. It is a coherent, transparent and inclusive policy for disaster management. The policy is written especially for government officials, private-sector, Civil Society Organisations (CSO), emergency management practitioners and community leaders on the need to understand the concepts and operating guidelines for disaster management in the country. The process is usuallyholistic in nature and reflects global best practices in disaster management. The policy must have inputs from stakeholders across the country, to ensure participation, ownership and sustainability. To find answers to certain questions, the relevant government agency – in this case National Emergency Management Agency for Nigeria (NEMA) must organise roundtable discussions to consider the zero document. Participants will be drawn from the three tiers of government; Federal, State and Local Government, Ministry Department and Agencies (MDAs); Military, Police and Para-military; CSOs; International NGOs; development partners and the private sector. The roundtable discussions generated fresh ideas, observations and recommendations that were incorporated into the policy. The sections of the policy would include the following (www.nema.gov.ng) :- Institutional Capacity, Coordination, Disaster Risk Assessment, Disaster Risk Reduction, Disaster Prevention, Preparedness and Mitigation, Disaster Response, Disaster Recovery, and Facilitators and Enablers.

I hope that you are delighted reading this unit. In the next unit, we will be looking into the environmental health services in emergency situations. Enjoy it.

5.0 SUMMARY

In this unit, we have looked at emergency management policy and now know that it is strategic in nature, and concern the establishment of long-term goals. The policy assigns responsibilities for achieving goals, may establish recommended work practices, and may determine criteria for decision-making. It is clear that policy development in emergency management is a process and should be developed in line with accepted emergency management principles. The policy should be widely debated and issues would include: - emergency preparedness and development planning; national emergency law and other relevant enabling legislation; national emergency management organisation; responsibility and major mission of the national emergency management organisation; tasks of the emergency management organisation; community and provincial emergency preparedness; health sector emergency preparedness; involving other groups and citizens in emergency management; managing resources; evaluating an emergency preparedness and response programme; priorities in implementing emergency preparedness.

6.0 TUTOR-MARKED ASSIGNMENT

1. Enumerate the issues in emergency management policy.
2. List the Emergency Preparedness Policy Principles.

7.0 REFERENCES/FURTHER READING

World Health Organisation (1999).Community emergency preparedness: a manual for managers and policy-makers**.**WHO; Geneva.

World Health Organisation (2002).Environmental health in emergencies and disasters: A practical guide. WHO, Geneva.

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UNIT 2 ENVIRONMENTAL HEALTH SERVICES IN EMERGENCY SITUATIONS

CONTENTS

1.0 INTRODUCTION

The environmental health conditions faced by people in disasters and emergencies are largely affected by the location and organisation of the site where they are obliged to live in the days, weeks or months after a disaster (WHO, 2002). The continuation or quick rehabilitation of effective environmental health services is of primary importance in emergency health management after the onset of a natural disaster. In fact, in the first weeks after disaster or emergency, the pattern of health needs, will change rapidly, moving from casualty treatment to more routine primary health care. Services should be reorganised, restructured and priorities would shift from health care towards environmental health measures (Park, 2005). Post-disaster environmental health priority measures are as follows (PAHO, 2000, WHO, 2002): water supply, sanitation, food safety, vector control, solid waste management, control of communicable diseases and prevention of epidemics, mortuary services and handling of the dead, health promotion and community participation, and human resources.

In this unit, we shall be discussing these priority areas namely; water supply, sanitation, control of communicable diseases and prevention, food safety, vector control, management of refuse, and recovery of the dead. Enjoy your reading.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- discuss water-supply preparedness and protection in disaster or emergency
- identify management of refuse in emergency situations
- describe vector control and communicable diseases control and prevention of epidemics
- explain sanitation and recovery of the dead
- discuss food safety.

3.0 MAIN CONTENT

3.1 Water Supply

Water-Supply Preparedness Protection

Water-supply problems arise in all phases of the disaster-management cycle. As with all other elements of emergency management, water supplies can be designed and maintained in ways that help to reduce the health impacts of disasters. Water sources are exposed to a variety of hazards that may damage or contaminate them (WHO, 2002). For example, roof catchment systems are often damaged by wind in tropical storms; shallow wells in areas with a high water-table are prone to contamination from flooding than are deep boreholes. They may also dry up sooner in a drought. On the other hand, all piped systems are subject to breaks and disruption during earthquakes, landslides or civil strife. Dug wells and boreholes are particularly vulnerable during wars, since bodies or toxic materials can be dumped in wells, and borehole pumps sabotaged (WHO, 2002).

In all activities to provide or improve water supplies during "normal" times, it is important that those responsible are aware of the specific hazards to which water sources might be subject. Hazard mapping should be as much a part of the planning of water-supply systems as other factors, such as water quality and taste, distance to users, and capital and recurrent costs. Simple modifications in design can sometimes help to protect the water source from an extreme natural event or industrial accident. For instance, flexible plastic pipe is more resistant than rigid pipe to earth tremors. Some basic improvements, such as raising the head wall of a dug well, and providing a cover and outward-sloping concrete apron around it, provide additional protection from contamination due to floods and run-off into the open hole. If the surface or groundwater could be affected by toxic hazards, it is better to

avoid the water source or providing an alternative water source should then be a high priority (WHO, 2002).

Emergency Water-Supply Strategy

The situations demanding an emergency water-supply response are as follows (WHO, 2002):

- Short-term emergencies affecting rural or unserved peri-urban communities
- Short-term emergencies in urban situations where a central water service is available
- Short-term emergencies involving population displacement and temporary shelters
- Long-term displacement emergencies that result in semi-permanent emergency settlements.

Though short-term water-supply needs and emergency measures may differ in the following types of situations mentioned above, the first priority is to provide an adequate quantity of water through trucking, even if its quality is poor, and to protect water sources from contamination. All trucks should be inspected to determine fitness, and cleaned and disinfected before transporting water. As a rule, gasoline, chemical, and sewage trucks should not be used. To provide extra disinfection capacity to control contamination in temporary open storage tanks (primarily inflatable rubber), these tanks can be provided with a tap (if possible) or siphon to allow direct withdrawal of the water from near the bottom of the reservoir rather than "dipping" and possibly contaminating the tank (PAHO, 2000). A minimum of 15 litres per person per day should be provided as soon as possible (WHO, 2002).

On the other hand, it is often better to organise separate human and material resources for providing water supplies for hospitals, nutrition centres, so that work on the general water supply is not delayed in order for hospitals not to swamped (over-burden) with cases of water-related disease. To have a more sustainable service in the long term, when installations should be more robust and less vulnerable to disasters, assessment of the water-supply system is required to identify needs, damage and resources, so as to be able to respond appropriately and with maximum impact. Monitoring of activities is essential also to ensure that the water supply activities are carried out as planned, including periodic reviews of the situation to ensure that the response remains relevant to the needs and resources of the communities affected by the disaster.

Assessment

Following a disaster, an assessment of damage, available water resources and unmet needs enables staff to direct resources where they are most needed. For instance, in urban areas, a thorough assessment of the post-impact status of the entire water-supply system should be undertaken, while taking steps to meet the immediate, emergency water needs of the population. Assessment should consider the following types of damage (WHO, 2002):

- Contamination of the water source and damage of the raw-water intake
- Damage to the water-treatment works, including structural damage, mechanical damage, loss of power supply and contamination due to flooding
- Damage to pumping stations
- Pressure failure in all or part of a water distribution network, allowing backflow.

In rural areas, the damage and resources assessment should be simpler, as installations are less complex. The following information on water resources is required (WHO, 2002):

- The current availability of supplies from all sources, the causes of supply problems (e.g. dry streams and wells, pipe breaks, dams empty, tanks damaged or silted up, roof catchments destroyed, etc.), and alternative sources and their status.
- The causes or indicators of contamination (e.g. human or animal bodies in the water, discoloration of the water, high turbidity, unusual smell, saltiness, diarrhea or other possible water-related illnesses in the population).

However, in urban situations, engineering staff may focus on assessing damage to infrastructure, while environmental health staffs assess the degree of unmet need. In such cases, it is important that the two areas of assessment are well coordinated so that the information they provide can be usefully combined.

Emergency Water-Supply Techniques

The factor in site selection for an emergency settlement should be the existence of reliable, good-quality water sources nearby (WHO, 2002). Permanent water-supply arrangements will depend on the length of time that the settlement is to be in use and the size of the population to be served. When existing water sources have been destroyed, new sources may also need to be selected. Steps should be taken to progress rapidly

from the initial emergency supply of water by whatever means possible, to gradual improvement. In the longer term, it should be possible to improve and protect existing sources and to develop new ones, such as springs and boreholes. The host population may give permission for their sources to be improved and shared.

A minimum number of essential measures to protect water supplies should be taken immediately after a disaster, as follows (WHO, 2002):

- Consult and involve the people concerned in solving (and thus understanding) the problems associated with water supplies.
- Segregate water uses (drinking, bathing, livestock watering).
- Protect water sources from faecal contamination by fencing them in, and by arranging for the use of a defecation field or shallow trench latrines at a suitable distance from the source.
- Store water in large covered tanks or containers for a day or two, if possible, allowing sediment to settle out, as subsequent chlorination is more effective if the water is clear.
- Give preference to groundwater rather than to surface water. Initially, it should be assumed that all surface water is contaminated.

When people take water for a variety of uses directly from a source, the most rapid intervention to protect health is to segregate uses in time or space, to reduce the risk of contaminating drinking-water. Environmental health staff should consult the people concerned, the village/community health or safety committee, and the primary health-care workers so that culturally acceptable methods of coordinating and segregating different types of use are adopted as in Figure 2 below.

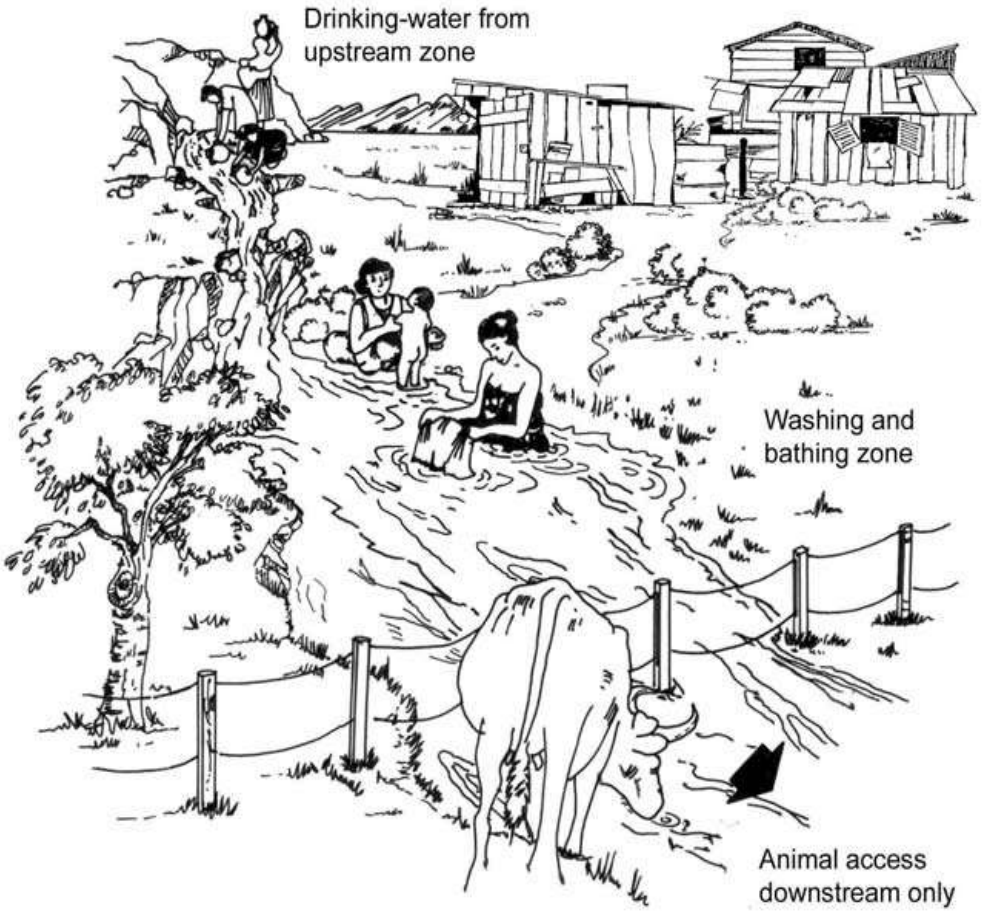

Fig. 2: Use of fencing to demarcate human and animal watering places
Source: Chartier *et al*. (1991) in (WHO, 2002)

3.2 Sanitation

Human Waste and Health

Human faeces may contain a range of disease-causing organisms, including viruses, bacteria and eggs or larvae of parasites (WHO, 2002). The microorganisms contained in human faeces may enter the body through contaminated food, water, eating and cooking utensils and by contact with contaminated objects. Diarrhoea, cholera and typhoid are spread in this way and are major causes of sickness and death in disasters and emergencies. Children are especially vulnerable to all the above infections, particularly when they are under the stress of disaster dislocation, high-density camp living and malnutrition. While specific measures can be taken to prevent the spread of infection through contamination by human faeces (e.g. chlorinating the water supply,

providing hand-washing facilities and soap), the first priority is to isolate and contain faeces.

Strategy for Excreta Disposal in Emergencies

Major health risks due to inadequate excreta disposal after disasters arise especially in urban areas following damage to existing systems, or when parts of a city receive large numbers of displaced or homeless people, so putting increased pressure on facilities that may already be under strain. A rapid assessment of damage and needs is first required to decide what emergency actions to take. The immediate response may include establishing or reinforcing sewage tinkering services, to bypass blocked sewers or to carry out intensive septic tank or latrine emptying in peri-urban areas (WHO, 2002). Every effort should be made to allow people to use their existing toilets, through temporary repairs to broken sewers and sewage treatment works.

Techniques for Excreta Disposal in Emergencies

The techniques for excreta disposal are shown in Figures 3, 4 and 5 below. In some emergency situations, several of these options are used at different stages of the response as the situation develops. The first three techniques– defecation fields, shallow trench latrines, and deep trench latrines–have mostly been used in displacement emergencies, but may be useful in any situation where temporary toilets are needed rapidly (WHO, 2002). The other techniques are widely used in stable situations, but can be adapted to any long-term emergency settlement. Whatever the technical option chosen, consideration should be given to hand-washing facilities to prevent faeco-oral transmission and night lighting to stem gender violence. Individual simple pit latrines, either hand-dug or drilled, may be an option in lower density, longer-term emergency settlements

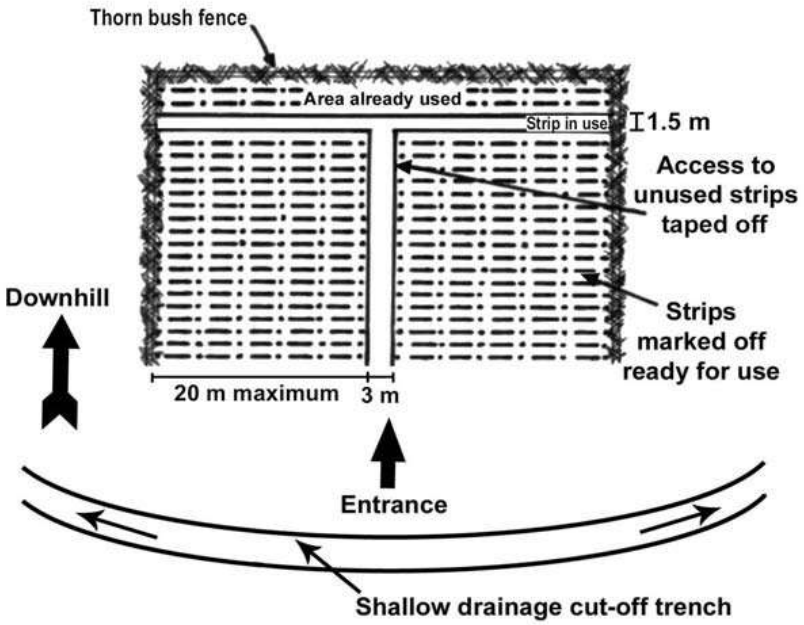

Fig. 3: **Open defecation Field**
Source: Reed (1994) in (WHO, 2002)

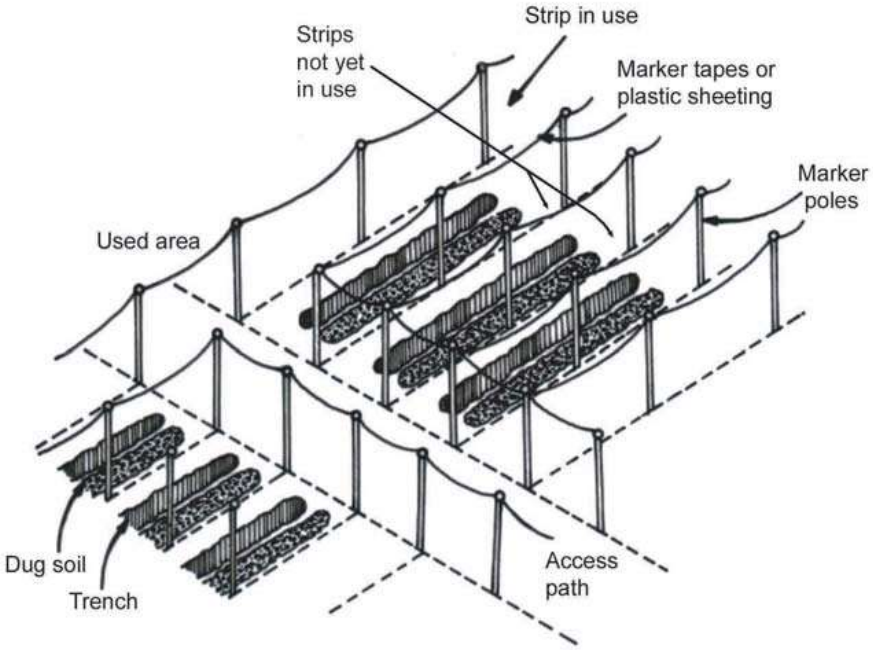

Fig. 4.A Trench Defecation Field with Guidance Markers
Source: Reed (1994) in (WHO, 2002)

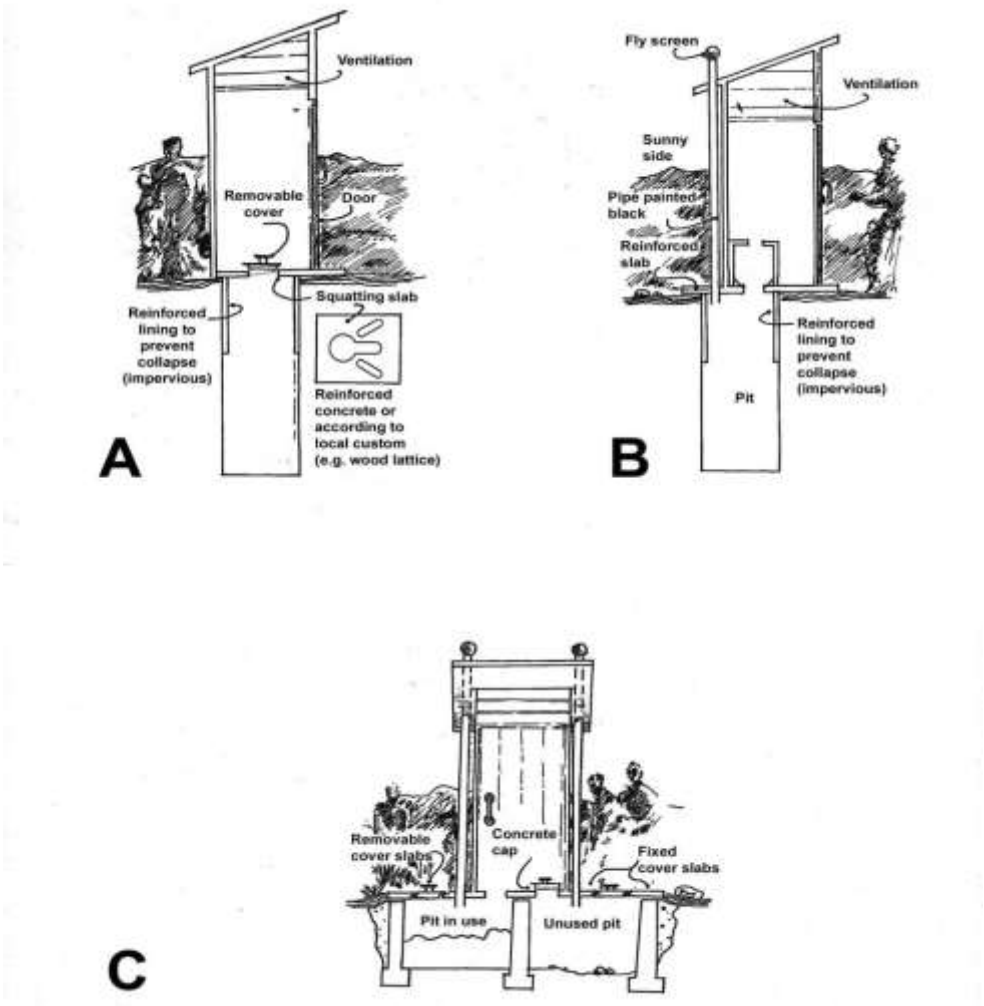

Fig. 5: Various types of pit latrine: (A) noventilated; (B) ventilated; (C) twin-pit, ventilated
Source: United Nations High Commissioner for Refugees (1999) in (WHO, 2002).

Disposal of Wastewater (Sullage)

The scale and nature of the wastewater problem should first be assessed so as to know information such as: how much wastewater is produced, and by how much does production vary during the day and over longer periods; the nature of the wastewater, including whether it is likely to be contaminated with faeces, and characteristics pertinent to the disposal method to be used; the source of the wastewater; the location of risks or nuisances it may cause; and soil, topography, climate and other factors that may determine which disposal options are possible. Wastewater from camps for refugees and displaced persons, field hospitals, feeding centres, washing facilities, etc., requires proper disposal. The most common means is through a soak away pit. This is an excavation at least 1.25 metres deep and 1.25 metres wide, filled with stones, that allows water to seep into the surrounding ground. It is sealed from above by an

impermeable layer (oiled sacking, plastic or metal) to discourage insect breeding. Wastewater is fed by pipe into the centre of the pit or absorption trench (WHO, 2002).

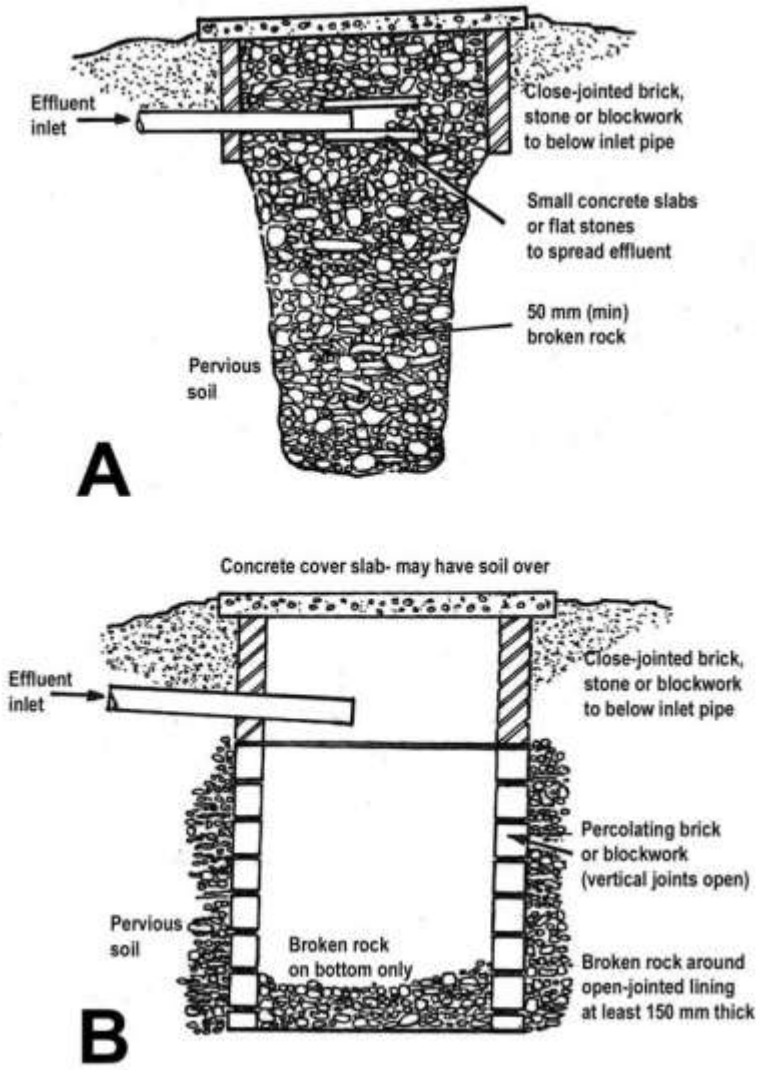

Fig. 6: Unlined (A) and lined (B) Soakage pits with effluent inlets

Source: Assar (1971) in WHO (2002)

Vector Control

Control programmes for vector-borne diseases should be intensified in the emergency and rehabilitation period, especially in areas where such diseases are known to be endemic. Of special concern in emergency situations are: leptospirosis and rat bite fever (rats), dengue fever and malaria (mosquitoes), typhus (lice, fleas), and plague (fleas). In flooded areas rats will escape their burrows in search for dry hiding places, often in dwellings. Flood waters provide ample breeding opportunities for

mosquitoes. Dead animals and other organic waste provide food for rats and other vectors.
The following are essential emergency vector control measures (PAHO, 2000):

- Resume collection and sanitary disposal of refuse as soon as possible.
- Conduct public education campaigns to eliminate vector breeding sites in and near the home and on measures to prevent infection, including personal hygiene..
- Survey camps and densely populated areas to identify potential mosquito, rodent, and other vector breeding sites.
- Eliminate vector breeding sites permanently by draining and/or filling in pools, ponds, and swamps; overturning or removing receptacles; covering water reservoirs; and carrying out sanitary disposal of refuse.
- Resume indoor spraying if used earlier as a routine control method in flooded areas.
- In areas where typhus is known to exist, apply residual insecticide powder to louse-infested persons, their clothing, and bedding in camps and temporary settlements (use DDT or Lindane, or alternatively, Malathion or Carbaryl, depending on local resistant strains and policy).
- Store food in enclosed and protected areas.

Well-organised control of mosquito breeding sites greatly reduces the need for outdoor spraying, but if surveys show it is needed, local resources should be employed. Consideration should be given to the high cost of outdoor spraying and its limited benefits. Vector control measures should be associated with other health measures, such as malaria chemoprophylaxis, to reduce or eliminate the risk of infection. Successfully controlling houseflies and rodents is nearly impossible in the early aftermath of a natural disaster. The only acceptable measures against such pests are environmental sanitation and personal hygiene (PAHO, 2000).

Management of Refuse

In many parts of the world, a disaster can cause transportation problems that disrupt waste-management systems that are inadequate even during normal times (WHO, 2002). Extra quantities of waste, or new forms of waste, such as rubble from destroyed buildings, or flood debris, may be generated by the disaster. As with wastewater, solid waste may not present a particular environmental health problem in emergencies and where rural communities are displaced, for example, and they receive a

dry ration of grain, pulses and oil distributed in bulk, there is likely to be very little solid waste produced.

The need for assessments should seek to determine: the quantity of refuse produced by the affected population, and how that is likely to change over time (for example, as ration packaging changes, or as market activities develop or are reestablished); the density and composition of refuse produced; the composition of the refuse produced; existing patterns of refuse management, including storage and destruction; any collection, reuse and recycling activities already carried out; constraints on collection and transport, such as personnel reduction, the use of trucks for rubble removal in critical areas, and damaged or blocked routes.

Outcome of the assessment would assist the environmental health team decide on refuse storage, collection and transportation, treatment and disposal. Also, special care must be taken with refuse from a field hospital or health centre. The main categories of concern for such wastes are: infectious, pathological, pharmaceutical, genotoxic, chemical wastes, sharps; including waste with high heavy metal content; pressurised containers; and radioactive waste. These wastes should then be collected separately every 12–24 hours. Small carts, preferably with lids, should be adapted to this end and the personnel assigned should be protected with aprons, masks, boots and gloves. Treatment should be done according to the type of waste (WHO, 2002).

Food Safety

Food safety problems vary in nature, severity and extent, and depend on the situation during an emergency. A breakdown in vital services, such as an interruption in water supply or electricity, can severely affect food safety. The main message to communicate is, **"If in doubt, throw it out."** In the absence of electricity, cold storage may be more difficult, if not impossible, and foods may be subject to microbial bacterial and fungal growth, and other forms of spoilage. Food can be damaged by smoke, chemicals used to extinguish a fire, or by other chemicals or radiation originating from an accidental or intentional release. Fires or explosions may result in foodstuffs becoming contaminated with dangerous chemicals or pathogenic microorganisms, as well as being damaged by water Disaster-affected people eating food from centralised kitchens that are not properly equipped or poorly run are extremely vulnerable to outbreaks of food borne illnesses. A combination of environmental contamination and improper handling of food increases the public's risk for cholera, shigellosis, norovirus and campylobacter (APC, 2007).

Canned foods and other shelf-stable products should be stored in a cool, dry place. They should not be stored above a stove, under a sink, in a damp garage or basement, or any place exposed too high or low temperature extremes. High acid foods such as tomatoes and other fruit can be stored up to 18-months. Low acid foods such as meat and vegetables can be kept two to five years (APC.2007).

3.3 Emergency Response Objectives

In a situation that poses a threat to food safety, the following objectives need to be addressed immediately (APC, 2007):

- Contact licensed food service facilities to assess the status of each one
- Assure that mass feeding sites also comply with best practices for safe and hygienic food preparation and service
- Ensure that licensed food service facilities can provide for hand washing, ware washing, safe water, and refrigeration (i.e., generators or dry ice)
- Provide information to the public and businesses regarding food safety topics such as: salvaging, sorting and proper disposal
- Provide information/recommendations to help manage donations of food.

Priority Activities

There are a number of specific tasks that city or LGA environmental health professionals could do in response to an incident that poses a threat to food safety. The tasks are (APC, 2007):

- Provide technical assistance and consultation to owners/managers of food establishments regarding general food safety issues
- Provide information to owners/managers of food establishments on salvaging and protecting perishable foods
- Provide information to owners/managers of food establishments on sorting and proper disposal of foods, which may have been contaminated
- Ensure that contaminated foods are properly collected and disposed of at sanitary landfills
- Provide technical assistance at mass feeding centres, if established, to ensure safe food handling practices and personal hygiene for workers and attendees
- Provide information to the public addressing protection of perishable foods, and advice on the sorting and disposal of food that may be contaminated.

Practical Guidance Information

The subsequent subsections will address the following topics: power failure, frozen foods, canned foods, and food storage.

- **Power Failure**

If the power is out for less than two hours, then food kept in a refrigerator or freezer is safe to eat. While the power is out, keep the refrigerator and freezer doors closed as much as possible to keep the food cold as long as possible. A full freezer will hold food safely for two days. A freezer that is half full will hold food safely for up to 24 hours. In general, refrigerated items should be safe up to four hours. (APC, 2007)

Discard any of the following foods that are stored in refrigerators or freezers if they are kept over four hours at a temperature above 41°F, or if the temperature exceeds 45°F for any length of time: meat, poultry, fish, eggs, egg substitutes and leftovers; milk, cream and soft cheese; casseroles, stews or soups; lunch meats and hot dogs; cream based foods; custard, chiffon, pumpkin or cheese pies; cream filled pastries; cookie dough made with eggs; whipped butter; cut melons and cooked vegetables. Also, discard any other food that has an unusual odour, colour, and texture or feels warm to the touch. The general public should be encouraged to obtain and keep an appliance thermometer in the refrigerator and freezer at all times to monitor actual temperatures following power losses (APC, 2007).

The following foods may be kept at room temperature a few days although food quality may be affected: butter or margarine; hard and processed cheeses; fresh uncut fruits and vegetables; dried fruits and coconut; opened jars of vinegar based salad dressings, jelly, relish, taco sauce, barbecue sauce, mustard, ketchup, olives and peanut butter; fruit juices; fresh herbs and spices; fruit pies, breads, rolls and muffins; cakes, except cream cheese frosted or cream filled; and flour and nuts (APC, 2007).

- **Frozen Foods**

Frozen foods that have thawed completely and warmed to a temperature above 41°F should be cooked and eaten immediately. Partially thawed frozen foods with ice crystals may be safely refrozen. Breads can be refrozen as well as fruits and vegetables that are still at or below 41°F. Do not refreeze dinners that have thawed. Discard any meat that has a questionable odour or has reached 41°F for two hours. Dry ice could be placed in a freezer on boards or heavy paper on top of packages to keep

the temperature below freezing. As a rule of thumb, use 2.5 to 3-pounds of dry ice per cubic foot of freezer space. Dry ice will burn skin so clean gloves should be worn when handling it and if the power will be out for an extended time, encourage retailers with multiple outlets to move perishable products to other locations with power (APC, 2007).

- **Canned Foods**

Do not use a leaking, bulging, badly dented or rusty food container because it may indicate the possible presence of pathogenic bacteria that can produce deadly toxins. In addition to these indicators, do not use cracked jars; jars with loose or bulging lids; canned food with a foul odour; or any container that spurts liquid when opening (APC, 2007).

- **Food Storage**

Canned foods and other shelf-stable products should be stored in a cool, dry place. They should not be stored above a stove, under a sink, in a damp garage or basement, or any place exposed too high or low temperature extremes. High acid foods such as tomatoes and other fruit can be stored up to 18-months. Low acid foods such as meat and vegetables can be kept two to five years.(APC, 2007).
Keep food covered at all times and store in a dry, cool or dark area if possible. Open food boxes or cans with plastic lids carefully so they can be closed tightly after each use. Place cookies or crackers in a sealable plastic bag. Empty opened packages of sugar, dried fruits and nuts into screw-top jars or airtight containers to protect them from rodents or other pests. Inspect all food for signs of spoilage before using anything (APC, 2007).

Use the following products within six months of purchase: powdered milk; dried fruit; dry crisp, crackers; and potatoes. The following food items should be used within one year: canned condensed meat and vegetable soups; canned fruits, fruit juices and vegetables; ready-to-eat cereals and uncooked instant cereals; peanut butter; jelly; hard candy; and canned nuts. The following items may be stored indefinitely in proper containers: wheat; vegetable oils; dried corn; baking powder; soybeans; instant coffee, tea and cocoa; salt; non-carbonated soft drinks; white rice; bouillon products; dry pasta and powdered milk (in nitrogen-packed cans) (APC, 2007).

Recovery of the Dead

Dead or decayed human bodies do not generally create a serious health hazard, unless they are polluting sources of drinking-water with faecal matter, or are infected with plague or typhus, in which case they may be infested with the fleas or lice that spread these diseases. In most smaller or less acute emergency situations therefore, families may carry out all the necessary activities following a death, where this is customary practice (WHO, 2002).

Proximity to the dead is deeply disturbing, as are the odours eventually produced by bodies. Dead bodies should therefore be buried or cremated without delay according to custom, or placed as soon as possible in mortuaries, to which the general population should not have access; here they are exposed solely for purposes of identification by family or friends, and, eventually, for the determination of the cause of death by medical experts. It must be carried out carefully to help families and loved ones deal with their loss. In the search for survivors following a disaster, it is usually inevitable that search and rescue team members will handle corpses, which can be traumatic. Anyone charged with managing a body recovery team must be aware that high levels of distress are likely in members of such teams, and that the need to recover the bodies must be balanced against this likelihood (WHO, 2002).

Organisation of the Mortuary

The mortuary should be a secure building and should have the following four sections (WHO, 2002):

- Reception room
- Viewing room
- Storage chamber for bodies (not suitable for viewing)
- Room for records and for storing personal effects.

The number of deaths in a major disaster may well exceed the normal capacities of the local mortuaries. Many disaster-management plans provide an indication of the number. As a minimum, mortuary equipment should include: stretchers, leather gloves, rubber gloves, overalls, boots, caps, soap and disinfectants, and cotton cloth. A mortuary hoist picks and shovels or earth-moving machines, and trucks may also be required for transportation and burial purposes (WHO, 2002).

Identification of the Dead

Early identification of corpses helps to preserve the mental health of the bereaved. Anxiety and uncertainty are replaced by grief, and the process of acceptance of death begins. Prompt identification and disposal ensure that families and friends are not exposed to the offensive by-products of bodily decay. The identification of dead bodies can be difficult when there are many of them: 1000 unidentified bodies require over 2000 square metres of space to display adequately, and a person walking between the rows of bodies may have to walk some 800 metres. When bodies decay rapidly, handling and identification become very unpleasant, so that it is sometimes preferable to bury the bodies quickly, and to carry out identification later, after disinterment, using forensic anthropological techniques. Rapid burial is not recommended, however, if facilities for conserving bodies, e.g. ice, electricity and embalming fluids, are readily available.

The identification of bodies by people other than family or friends can be a very lengthy process. If the disaster has taken place in an area where people usually carry some form of identification (i.e. credit cards, identity cards, driving licences), a professional team can process 100 bodies per hour. In parts of the world where such items are not carried, the process can obviously take much longer, and rapid burial should therefore be considered. If it is possible to identify the deceased, a medical examiner should issue a death certificate. An official record of death should be prepared and an identification tag affixed to the body. Personal effects should be returned to the next of kin. In conflict situations, many deaths may be the result of human rights abuses by one or more of the warring parties. In such situations, it is important to accurately record the cause of death and identify the body, or label the body for later identification, and record the place of burial. This information may be important in an investigation of possible human rights abuses (WHO, 2002).

Handling the Dead

Burial in individual graves is the method of choice, unless the number of dead is excessively large, or climatic or other constraints make this impossible. Individual graves can be dug manually, providing work, a sense of purpose, and a ritual element for the community affected by the disaster. If the number is too large, or circumstances demand it, trenches can be dug by mechanical means and bodies placed in them head to foot to save space (WHO, 2002). If it is expected that the bodies will be disinterred, they should be buried 50 centimetres from the surface. Coffins will often be unavailable or of poor quality. It is then advisable to wrap the corpses in plastic sheets; these are resistant to decay, and

thus can help to keep the remains separate from the soil (WHO, 2002). When locating and planning long-term emergency settlements, an area should be identified for burial. This should be large enough to accommodate the expected number of graves over the life of the settlement, and separate areas for people of different religions. The area should be chosen in consultation with the community concerned, and with attention to ground conditions, groundwater conditions, and distance from water sources (WHO, 2002). Although burial is a quick and economical method of body disposal, alternatives can be used if they are more acceptable culturally, and if resources (including time) are available. Such alternatives include cremation, embalming, and certain types of ritual display of the dead. It may be useful to take tissue samples from the deceased for identification purposes. The samples can later be compared with samples from surviving relatives (WHO, 2002).

Ceremonial Aspects

Disasters have a deeply disruptive effect on communities. Even if their more easily observable consequences are death, wounds, disease, loss of property, etc., the psychological consequences can be equally important and may be longer-lasting. Unfortunately, the techniques for dealing with people suffering from psychological trauma are not as clear-cut as those for dealing with material injuries and a great deal of improvisation will have to be accepted. The community's solidarity networks, rituals and codes are very important in dealing with the psychological impact of disasters and death, and they should be encouraged.

In a disaster, ritualised behaviours normally available to deal with death may be swept aside. The large number of deaths occurring together, the lack of advance warning, the previous good health of so many of the victims, and the clustering of deaths within households can overwhelm normal coping mechanisms, and leave survivors with profound and possibly lifelong trauma. For this reason, the ceremonies of burial or other forms of disposing of the dead should be as formal and as well planned as possible. Many such ceremonies will be religious and involve the entire community or all the family members.

Whatever their nature, these ceremonies are essential aspects of the grieving process. Unfortunately, popular beliefs about the health risks of human corpses have sometimes led to the hasty and undignified use of lime or burning to dispose of human remains. Authorities should resist this: ceremonial grieving for the dead is the beginning of recovery in the disaster-recovery cycle. Relief organisations should cooperate with the authorities in the disaster area to facilitate ceremonial burials. If desired, individual ceremonies can be carried out by families, but collective

burial ceremonies may better help society as a whole to deal with the disaster (WHO, 2002).

SELF-ASSESSMENT EXERCISE

i. Discuss water-supply preparedness protection in emergencies.
ii. Explain emergency water-supply techniques.
iii. Describe the techniques for excreta disposal in emergency situations.

3.3 Control of Communicable Diseases and Prevention of Epidemics

The Importance of Communicable Diseases in Emergencies and Disasters

Common causes of death in emergencies and disasters are diarrhoea, acute respiratory infection, measles, malnutrition and, in endemic zones, malaria. All except malnutrition are communicable diseases directly related to environmental health conditions, and even malnutrition is greatly exacerbated by communicable disease (WHO, 2002). The control of communicable diseases depends on a healthy environment (clean water, adequate sanitation, vector control, shelter), immunisation, and health workers trained in early diagnosis and treatment.

The conditions leading to an epidemic are caused mostly by secondary effects and not by the primary hazard, except in the case of flooding, which can cause an increase in waterborne and vector-borne diseases. There may also be major epidemics of highly contagious diseases—those spread by personal contact - are most commonly the result of crowding survivors living in crowded temporary accommodation without adequate ventilation or adequate facilities for personal hygiene and laundry. Steps must be taken in advance to increase the level of awareness and organisation, and extend normal health and sanitary services that will provide additional protection for the community if disaster strikes.

Measures for Controlling Communicable Diseases and Epidemics

The need for preparedness measures taken before a disaster can greatly increase the ability to control communicable diseases and prevent epidemics. Such measures include: training health and outreach staff in the identification and management of specific diseases considered to be a threat; creating local stocks of supplies and equipment for diagnosis, treatment and environmental health measures in case of disease outbreaks; strengthening health surveillance systems and practicing

protocols for managing information on certain diseases; raising awareness among the population likely to be affected by a disaster on communicable diseases and the need for early referral to a health facility.

Public-health surveillance, which is the collection, analysis and dissemination of health information to enable appropriate action to be taken, is particularly important in disasters and emergencies because of the particular vulnerability of the affected population, the sudden changes that can occur in health due to the unstable nature of the situation, and the need to share quantitative data rapidly with a range of partners to enable rapid and effective action to be taken must always be followed up (Médecins Sans Frontières, 1997). While it is important to designate specific health staff for public-health surveillance, neighbourhood and community health workers, as well as the personnel of temporary relief centres and hospitals, should be alert to patients presenting with any of a list of diseases, including typhoid or paratyphoid fever, cholera, typhus, encephalitis, meningitis, or cases of malaria.

Suspected disease outbreaks, indicated by information from a health surveillance system, should be rapidly investigated to enable decisions to be taken on how to control the outbreak (WHO, 1999). The role of outreach workers in these three activities is important. They can inform people about the disease and encourage early referral of patients to a treatment/ isolation centre; identify vulnerable families and individuals requiring particular support or protection; and encourage improvements in hygiene conditions and hygiene behaviour by identifying areas where facilities need to be improved and protective hygiene behaviours need to be promoted.

Control of Cholera: an example

Cholera is used as an example here because the disease remains endemic in many parts of Africa, Asia and Latin America (WHO, 2002). In the early 1990s, cholera epidemics affected millions of people in Africa and Latin America. Its prevention and control in emergencies provide examples of general approaches to be adopted with other epidemics. “Healthy” cholera carriers (i.e. people carrying *Vibrio cholera* with no manifest disease) are now common in the general population of many developing countries.

A case of cholera should be suspected when:

- In an area where the disease is not known to be present, a patient aged 5 years or more develops severe dehydration or dies from acute watery diarrhoea
- In an area where there is an outbreak of cholera, any patient aged 5 years or more develops acute watery diarrhoea, with or without vomiting (World Health Organisation, 1993).

Although cholera can be treated, it cannot be controlled by vaccinations or by mass chemotherapy, but only by redoubling efforts to safeguard water supplies; maintaining a high free residual chlorine level (preferably 0.4–0.5 mg/l) in water supplies; disposing of faeces so as not to contaminate water or food; Promote washing of hands with soap or ashes and clean water whenever food is being handled (WHO, 2005).

4.0 CONCLUSION

Environmental health problems arising from emergencies and disasters are connected to their effects on the physical, biological and social environment that pose a threat to human health, well-being and survival. The post-disaster environmental health priority measures in disasters include; water supply, sanitation, food safety, vector control, solid waste management, control of communicable diseases and prevention of epidemics, mortuary services and handling of the dead, health promotion and community participation, and human resources. Ensuring that these areas mentioned above are properly addressed is the most effective means of protecting the health of those affected by emergencies.

I am delighted that you have studied this unit. In the next unit, we shall be looking roles of various agencies in emergencies and disasters. I hope you look forward to it.

5.0 SUMMARY

In this unit you have learnt environmental health services in emergency situations. The priority areas discussed are; water supply, sanitation, control of communicable diseases and prevention, food safety, vector control, management of refuse, and recovery of the dead.

You now know that water-supply problems arise in all phases of the disaster-management cycle. As with all other elements of emergency management, water supplies can be designed and maintained in ways that help to reduce the health impacts of disasters.

On sanitation, human faeces may contain a range of disease-causing organisms, including viruses, bacteria and eggs or larvae of parasites. The microorganisms contained in human faeces may enter the body through contaminated food, water, eating and cooking utensils and by contact with contaminated objects. Diarrhoea, cholera and typhoid are spread in this way and are major causes of sickness and death in disasters and emergencies. Children are especially vulnerable to all the above infections, particularly when they are under the stress of disaster dislocation, high-density camp living and malnutrition. Therefore, techniques for disposal should be such that will give consideration to hand-washing facilities to prevent faeco-oral transmission and night lighting to stem gender violence.

On vector control, we have learnt that control programs for vector-borne diseases should be intensified in the emergency and rehabilitation period, especially in areas where such diseases are known to be endemic. Of special concern in emergency situations are: leptospirosis and rat bite fever (rats), dengue fever and malaria (mosquitoes), typhus (lice, fleas), and plague (fleas).

In many parts of the world, a disaster can cause transportation problems that disrupt waste-management systems that are inadequate even during normal times. Extra quantities of waste, or new forms of waste, such as rubble from destroyed buildings, or flood debris, may be generated by the disaster. The main categories of concern for such wastes are: infectious, pathological, pharmaceutical, genotoxic, chemical wastes, sharps; including waste with high heavy metal content; pressurised containers; and radioactive waste. These wastes must be disposed of properly to prevent infection. Food safety problems vary in nature, severity and extent, and depend on the situation during an emergency. A breakdown in vital services, such as an interruption in water supply or electricity, can severely affect food safety. The main message to communicate is, **“If in doubt, throw it out.”**

Dead or decayed human bodies do not generally create a serious health hazard, unless they are polluting sources of drinking-water with faecal matter, or are infected with plague or typhus, in which case they may be infested with the fleas or lice that spread these diseases. In most smaller or less acute emergency situations therefore, families may carry out all the necessary activities following a death, where this is customary practice.

On communicable disease, the common causes of death in emergencies and disasters are diarrhea, acute respiratory infection, measles, malnutrition and, in endemic zones, malaria. Steps must be taken in advance to increase the level of awareness and organisation, and extend

normal health and sanitary services that will provide additional protection for the community if disaster strikes.

6.0 TUTOR-MARKED ASSIGNMENT

i. Discuss the measures for controlling communicable diseases and epidemics.
ii. List the priority activities that city or LGA environmental health professionals could do in response to an incident that poses a threat to food safety.

7.0 REFERENCES/FURTHER READING

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MODULE 3 ROLES, COLLABORATION, RESOURCES MOBILISATION, ALLOCATION AND MANAGEMENT

UNIT1 ROLES OF VARIOUS AGENCIES IN EMERGENCIES AND DISASTERS

CONTENTS

1.0 INTRODUCTION

Disaster and emergency management involves a wide spectrum of persons and organisations with varying expertise to make input into efforts geared toward bring relief to the effected and minimising the impact on health and the environment as well as preventing further loses (Aniefiok Moses, 2011). It is pertinent to state that everybody and organisation has a role to play when disaster struck or when there is imminence of the occurrence of disaster and emergencies. In this unit we will be discussing roles of various agencies in emergencies and disasters.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- describe the roles and responsibilities in disaster management
- identify the legislations for disaster management in Nigeria
- enumerate the roles and responsibilities of all tiers of government in Nigeria for disaster management
- explain the roles of community in disaster management
- appreciate the roles of volunteers in disaster management.

3.0 MAIN CONTENT

3.1 Roles And Responsibilities: Why Describe Roles and Responsibilities?

Roles and responsibilities should be defined and described to ensure that each organisation knows precisely what is expected of it and that everyone is aware of the general roles of all relevant organisations (WHO, 1999). The definition of roles and responsibilities may also assist in defusing rivalry between organisations competing for the same task or group of tasks, and will ensure that all tasks are allocated.

In Nigeria and according to National Disaster Management Framework (NDMF) (www.nema.gov.ng), disaster management is the coordination and integration of all activities necessary to build, sustain and improve the capability to prepare for, protect against, respond to and recover from threatening or actual natural or human-induced disasters. It is a multijurisdictional, multi-sectoral, multi-disciplinary and multi-resource initiative. Therefore, it is vital that the Federal, State and Local Governments, Civil Society Organisations (CSOs) and the private sector discharge their respective roles and responsibilities and complement each other in achieving shared goals of disaster management. In this wise, the following questions are relevant to the definition and description of roles and responsibilities (WHO, 1999):

- Is there an adequate description of who performs each task that is required?
- Is there an adequate description of the roles and responsibilities of each organisation?
- Do members of each organisation know the specific tasks to be performed by their organisation?
- Do members of each organisation know the general role of other organisations?

- Where is it possible to obtain the information to define and describe adequately the various roles and responsibilities?
- Which is the primary (or lead) organisation for a given type of emergency, and which are the secondary (or support) organisations?

Information on Roles and Responsibilities

The first place to look for information on the roles and responsibilities of government organisations is legislation that describes their general functions and powers. These functions and powers are usually applicable to daily life but are also important in emergency management (WHO, 1999). For example, one of the major functions of the police is to maintain law and order, which they do every day as well as during emergencies. Government health organisations are usually involved in ensuring that steps are taken to maintain the health and well-being of the public; they will perform the same function during and after emergencies. Legislation may also provide for special organisational functions in emergency management.

In view of legislation that may provide for special organisation functions in emergency and disaster management, first, there is in Nigeria, the National Emergency Management Agency (NEMA) Act 12 of 1999 as amended by Act 50 of 1999, places the coordinating role on NEMA (Aniefiok Moses, 2011). NEMA therefore relies on several agencies to carry out its functions. NEMA's role include coordination, establishment of contact with relevant organisation, provision of platform for communication and the management of information, provision of relief materials, etc. NEMA should be the lead agency with the authority to declare that a particular incident is a disaster or constitutes an emergency situation requiring a national mobilisation and response (Aniefiok Moses, 2011). Second, there is the National Disaster Management Framework (NDMF) provides this mechanism that serves as a regulatory guideline for effective and efficient disaster management in Nigeria (www.nema.gov.ng). The framework defines measurable, flexible and adaptable coordinating structures, and aligns key roles and responsibilities of disaster management stakeholders across the nation. It describes specific authorities and best practices for managing disasters, and explains a paradigm shift in disaster management beyond mere response and recovery. The NDMF (www.nema.gov.ng) offers a holistic approach to disaster management. It serves as a legal instrument to address the need for consistency among multiple stakeholders. It is a coherent, transparent and inclusive policy for disaster management in Nigeria.

3.2 Legislation for Disaster Management Structures in Nigeria

Disaster Management structures shall be backed-up by an enabling law at all levels of government. These enabling laws shall, amongst other things, specify roles and responsibilities, membership of its Councils, leadership tenure and other incidental or ancillary matters. In view of this, there is National Disaster Management Framework (www.nema.gov.ng). The framework defines measurable, flexible and adaptable coordinating structures, and aligns key roles and responsibilities of disaster management stakeholders across the nation. To give credence to the NDMF, there is the National Contingency Plan which is a multi-hazard contingency plan with a focus on the hazards with the highest probability of occurrence and severity (www.nema.gov.ng). A multi-hazard contingency plan creates the platform to bring several humanitarian players together and acts as a framework for making contingency arrangements for disaster response. Relevant stakeholders can also use the National Contingency Plan as justification for organisational preparedness using the roles that have been assigned to them in the plan.

Describing Roles and Responsibilities by Task

Describing roles and responsibilities by task assists those who want a quick overview of who is supposed to do what, and those who are responsible for controlling or coordinating emergency management activities (WHO, 1999). The description is based on a list of tasks and their allocation to the organisations. The tasks could be listed alphabetically or according to the aspect of emergency management to which they pertain, under the headings: Task, Lead organisation, Support organisations. It is also most pertinent that the description of roles and responsibilities by organisation be made. This is useful for members of a specific organisation as they can see at a glance what their organisation has undertaken to do.

The Roles of the Federal Government in Disaster Management

The Federal Government through the National Emergency Management Agency (NEMA) shall by this policy (NDMF) perform the following disaster management functions (www.nema.gov.ng):

- Formulate policy on all activities relating to disaster management in Nigeria.
- Coordinate the activities of other stakeholders in Disaster Management.

- Co-ordinate plans and programmes for efficient and effective response to disasters in the country.
- Co-ordinate and promote research activities relating to disaster management in the country.
- Monitor the state of preparedness of all organisations and agencies which may contribute to disaster management in Nigeria.
- Collate data and report from relevant agencies to enhance forecasting, planning and field operations of disaster management.
- Educate the public on disaster prevention and control measures.
- Co-ordinate and facilitate the provision of necessary resources for search and rescue and other types of disaster curtailment activities.
- Co-ordinate and support the activities of non-governmental organisations and development partners engaged in disaster management in the country.
- Mobilise financial and technical resources from private sector, international non-governmental organisations and development partners for the purpose of disaster management in Nigeria.
- Collect emergency relief materials or supplies from local, international and non-governmental agencies for distribution to the people affected by disaster**.**
- Work closely with SEMA and LEMA to assess and monitor where necessary the distribution of relief materials to disaster survivors and Internally Displaced Persons (IDPs), refugees, and those adversely affected by mass deportation and repatriation from any other country as a result of crises, disasters or foreign policies.
- Assist in the rehabilitation of survivors, IDPs and refugees where necessary, and those adversely affected by mass deportation and repatriation from any other country as a result of crises, disasters or foreign policies.
- Prepare the annual budget for disaster management in Nigeria.
- Process relief assistance to such countries that have experienced disaster as may be determined by the Federal Government of Nigeria from time to time.
- Foster strong working relationship with all relevant National and International Agencies including the United Nations institutions for the reduction of disasters.
- Facilitate the establishment of enabling legislation and monitor the activities of State Emergency Management Agency (SEMA) and Local Emergency Management Authority (LEMA).

- Perform such other functions which, in the opinion of the Governing Council are required for the purpose of enhancing effective disaster management in Nigeria.

The Roles of State Governments in Disaster Management

All States in the Federation shall ensure the establishment of a body to be known as State Emergency Management Agency (SEMA) backed up by State Legislation. The legislation shall include provisions that will ensure that Local Governments in the State also establish authorities with similar functions. The state legislation according to NDMF shall among other things make provisions for the following (www.nema.gov.ng):

- Establish in the state, a body to be known as the State Emergency Management Agency, hereinafter referred to as SEMA.

SEMA

- shall be a body corporate with perpetual succession
- May sue and be sued in its corporate name.

There shall also be established for the management of SEMA, a Governing Council, hereinafter referred to as "the Council". The Council shall consist of –

- The Deputy Governor of the State, who shall be the Chairman.
- The Secretary to the State Government.

One representative each from:

- The State Ministry of Agriculture
- The State Ministry of Women Affairs and Social Development
- The State Ministry of Health
- The State Ministry of Information
- The State Ministry of Education
- The State Ministry of Works
- The State Ministry of Water Resources
- The State Fire Service
- The Federal Airport Authority of Nigeria in the State
- The State Ministry of Environment
- The State Ministry of Urban and Regional Planning/ Lands and Survey
- The State Ministry of Justice
- The State Ministry of Local Government and Chieftaincy Affairs

- The Disaster Response Unit (DRU) within the State/geo political zone
- The Nigeria Police Force
- The Federal Road Safety Corps
- Directorate of Road Traffic Services
- The Nigeria Security and Civil Defence Corps
- The Nigerian Red Cross Society
- The State Ministry of Finance
- The Nigerian Maritime Administration and Safety Agency in coastal States
- National Oil Spill Detection and Response Agency (NOSDRA)
- Such institutions/voluntary organisation as may be determined from time to time by the Council and
- The Head of the State Emergency Management Agency as Member/Secretary.

The State Government through the State Emergency Management Agency (SEMA) shall by this policy as outlined by the NDMF, perform the following disaster management functions (www.nema.gov.ng):

- Formulate policy on all activities relating to disaster management in the state.
- Co-ordinate plans and programmes for efficient and effective response to disasters in the State.
- Co-ordinate and promote research activities relating to disaster management in the State.
- Monitor and provide feedback to NEMA on the state of preparedness of all organisations and agencies which may contribute to disaster management within the State.
- Collate data and report from relevant agencies in the state so as to enhance forecasting, planning and field operations of disaster management, and supply same to NEMA for planning purposes.
- Educate the public on disaster prevention and control measures within the state.
- Co-ordinate and facilitate the provision of necessary resources for search and rescue operations and other types of disaster curtailment activities within the state.
- Mobilise support and resources from the National Emergency Management Agency (NEMA) when damages and need assessments are considered beyond the capacity of the state to respond.
- Facilitate the enabling legislation for the establishment of Local Emergency Management Authority (LEMA) for all the Local Governments in the state.

- Work closely with LEMA for distribution of relief materials to disaster victims.
- Perform such other functions which, in the opinion of SEMA Governing Council are required for the purpose of enhancing disaster management in the state.

The Roles of Local Governments in Disaster Management

The Local Government according to NDMF shall put in place a legislation establishing a disaster management body to be known as the Local Emergency Management Authority, hereinafter referred to as LEMA (www.nema.gov.ng):

LEMA

- Shall be a body corporate with perpetual succession
- May sue and be sued in its corporate name.

There shall also be established for the management of LEMA, a Local Emergency Management Committee hereinafter referred to as "the Committee". The Committee shall consist of –

- The Vice - Chairman of the Local Government Council, who shall be the Chairman
- The Secretary to the Local Government
- Department of Works
- Department of Agriculture
- Local Government Education Authority
- Department of Health
- Local Government Traditional Council
- Local Government Information Unit
- Department of Social Development and Mobilisation
- Department of Physical Planning
- A representative of the Disaster Response Unit (DRU), responsible for the Local Government
- The Divisional Police Officer
- The Medical Director in charge of any government hospital within the local government or his equivalent

One representative each from:

- The Federal Road Safety Corps
- The Nigeria Security and Civil Defence Corps
- The Nigerian Red Cross Society
- The Fire Service

- National Orientation Agency
- Any such voluntary organisation as may be determined from time to time; and
- The Head of the Local Government Emergency Management
- Agency (LEMA) as Member/ Secretary.

The Local Government through the Local Emergency Management Authority (LEMA) shall by this policy perform the following disaster management functions:

- Coordinate disaster management activities and respond to disaster events in Local Government area.
- Monitor and provide feedback to SEMA on the status of preparedness of all organisations and agencies which may contribute to disaster management within the Local Government Area.
- Collect and collate data on disaster and disaster risk areas in their respective Local Governments and share same with SEMA.
- Mobilise support and resources from the State Emergency Management Agency (SEMA) when damages and need assessments are considered beyond the capacity of the Local Government to respond.
- Establish and develop Disaster Management capacity of community structures**.**

SELF-ASSESSMENT EXERCISE

i. Mention those that shall consist the local emergency management authority and list the disaster management functions of the local emergency management authority.
ii. State emergency management authority shall have "the Council" to oversee the management of disaster. The council shall consist of who? Mention the functions that they SEMA will perform following disaster management.

3.3 Communities in Disaster Management

The community structures (Neighbourhood associations, schools, Community- Based Organisations (CBOs), Faith- Based Organisations (FBOs), Non-Governmental Organisations (NGOs) etc**.)** according to the NDMF, shall be established, properly sensitised, mobilised and empowered to actively participate in Disaster Management activities by LEMA, with support from SEMA and NEMA (www.nema.gov.ng).

Roles of Communities in Disaster Management

Community structures shall perform the following functions in disaster management according to the NDMF (www.nema.gov.ng):

- Ensure commitment and preparedness of community members to disaster management.
- Sensitise and build the capacity of communities that constitute disaster fronts in preparation for initial response to disaster threats.
- Mobilise community resources and build community capacity and resilience to prepare for, respond to and mitigate the impact of disasters.

Community Strategies for Disaster Management

With technical support from LEMA, SEMA and NEMA, community structures shall adopt(Among other things) the following disaster management strategies according to the NDMF (www.nema.gov.ng):

- Ensure active participation in the preparation and implementation of Disaster Management Plans
- Create awareness on Disaster Risk Reduction (DRR) and Early Warning Systems (EWS).
- Train and re- train on Basic First Aid skills.
- Adapt disaster management strategies to meet local needs and peculiarities.
- Encourage community participation in activities that will enhance environmental changes and adaptations.

Disaster Response Units (DRUs) in Disaster Management

DRUs shall be assigned in designated military formations located across the Country by the Defense headquarters and Ministry of Defense. They shall have the mandate of providing specialised services in humanitarian assistance during disasters as may be requested by the President of the Federal Republic of Nigeria in line with established Guidelines for Call-out of the Armed Forces in Aid to Civil Authorities. The DRUs shall work closely with NEMA and SEMA of the disaster affected state according to the NDMF (www.nema.gov.ng).

Roles of DRUs in Disaster Management

Amongst other things, the DRUs shall perform the following functions in disaster management:

- Provision of infrastructural support (communications, technical equipment and manpower) for command and control.
- Search & Rescue and relief operations at disaster sites.
- Provision of medical care at the incident site and evacuation of casualties.
- Render firefighting services in conjunction with fire service institutions.
- Render logistics support for transportation.
- Setting up and running of relief camps when necessary.
- Opening of routes and construction/repair of roads and bridges to enable relief teams/materials to reach affected areas.
- Repair, maintain and run essential services especially at the initial stages of Disaster Occurrence.
- Assist in evacuation of people to safer places before and after the disaster.
- Provide escorts for men, material and security of installations.
- Assist in the management and handling of International relief, if requested by the civil administration.
- Provide psychological counselling to the people affected by the disaster.
- Provide security for people and property within the area affected by disaster.
- Any other activity that will enhance effective disaster management in the country.

Volunteers in Disaster Management

Volunteers in Disaster Management shall be individuals or groups with specialised or basic training in different areas of disaster management. Volunteerism refers to rendering of time, skills, experience or resources for the advancement of disaster management. They shall be established by NEMA, SEMA and LEMA to tap into the huge knowledge and experiences of specialised skills of personnel living or working in the country.

Roles of Volunteers in Disaster Management

Volunteers in disaster management shall perform the following functions, amongst others according to the NDMF (www.nema.gov.ng):

- Assist in search and rescue operations in case of disaster.
- Function as emergency personnel that can render specialised assistance to disaster survivors.
- Give useful information of places prone to both human-induced and natural disasters.

- Partake in simulation exercises.
- Help in direct distribution of relief materials in emergency situations.
- Take part in activities that will lead to disaster risk reduction measures in the community.

Volunteers shall perform their duties in an organised manner and under the supervision of and guidance of NEMA, SEMA and LEMA in preparing for, preventing and responding to disasters. They shall be at least trained in Basic Life Support, disaster preparedness and response, relief, prevention, mitigation, contingency planning, recovery**,** capacity assessment, water and sanitation.

4.0 CONCLUSION

Coordination and integration of all activities is very necessary in Disaster Management if we have to build, sustain and improve the capability to prepare for, protect against, respond to and recover from threatening or actual natural or human-induced disasters. To prepare against disaster is a multijurisdictional, multi-sectoral, multi-disciplinary and multi-resource initiative. The Federal, State and Local Governments, Civil Society Organisations (CSOs) and the private sector must know very well their roles and discharge those respective roles and responsibilities in the appropriate manner as well as complement each other in achieving shared goals of disaster management. To do this requires a policy and the National Disaster Management Framework (NDMF) provides this mechanism that is measurable, flexible and adaptable for coordinating structures, and helps to aligns key roles and responsibilities of disaster management stakeholders at all levels across the nation.

I hope that you have enjoyed reading this unit. In the next unit we shall be looking into procedures in the management of emergencies and disasters. I wish you luck reading it.

5.0 SUMMARY

In this unit you have been put through emergency and disaster management with respect to roles and responsibilities. Roles and responsibilities should be defines and described to ensure that each organisation or stakeholder knows precisely what is expected of it. We also have looked at policy as it concerns this area and now know that policy such as NDMF enables the coordination and integration of all activities necessary to build, sustain and improve the capability to prepare for, protect against, respond to and recover from threatening or actual natural or human-induced disaster or emergency. We can also see

that at all levels – federal state and local government levels including at the community level, roles must be taken up for the purpose of enhancing effective disaster management in Nigeria. I hope that you have enjoyed reading this unit. Please, should you have questions on this unit, kindly contact your tutorial facilitator. In the next unit, we shall be discussing procedures in the management of emergencies and disasters.

6.0 TUTOR-MARKED ASSIGNMENT

i. Mention the roles of community in disaster management.
ii. Enumerate the disaster management strategies that the community structures shall adopt.
iii. Volunteers in disaster management shall be individuals or groups with specialised training in different areas of disaster management. Mention the roles volunteers in disaster management shall perform.

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UNIT 2 PROCEDURES IN THE MANAGEMENT OF EMERGENCIES AND DISASTERS

CONTENTS

1.0 INTRODUCTION

Emergencies and disasters are difficult to predict and the effects are equally uncertain. That is why a national disaster and emergency response plan should be developed. What we are talking about here is contingency planning process whereby we come up with that will help us to make the effects of disaster less serious. The contingency planning process builds organisational capacity and is thus a foundation for operations planning and all aspects of emergency response (UNHCR, 2007). In this unit, we shall be looking at the procedures in the management of emergencies and disaster.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain disaster and emergency management plan and response
- discuss the context of emergency and disaster plans
- describe the coordination of disaster management
- discuss advocacy and public enlightenment
- state disaster risk management plan

3.0 MAIN CONTENT PROCEDURES IN DISASTER AND EMERGENCY MANAGEMENT

3.1 Disaster and emergency management plan and response

To make progress in disaster and emergency response, planning is vital both before and during an emergency, and operations planning must be based on detailed needs, resource, and participatory assessments (UNHCR, 2007) All emergencies present in some measure unanticipated contingencies and difficulties. In those cases, action has to become innovative and emergent. However, planning will clearly improve any organised response effort by identifying what in all probability must be done, how it should be done, and what resources will be needed. In this manner, organised response can be made more highly predictable and efficient (WHO, 1999). The plan should specify the coordinating agency. There should be immediate, medium and long term framework to provide for systematic approach to disaster and emergency management (Aniefiok Moses, 2011).

In Nigeria, the disaster Contingency Plan has been developed to provide a basis for coordination of humanitarian minimum response in the event of a major/catastrophic disaster for an initial 10 (ten) days by the Federal Government of Nigeria through the National Emergency Management Agency (www.nema.gov.ng). The document adopted the coordination mechanism contained in the National Disaster Management Framework (NDMF). The information and communication mechanism of the Incident Command System (ICS) was also adopted to ensure that the implementation of the document is in line with best practices.

3.2 Context of Emergency and Disaster Plans

Emergency plans do not operate in a vacuum, they are linked to the culture and perception of risk of those developing the plans and of those for whom the plans are developed (WHO, 1999). They must be developed to suit the context in which they will operate, which is one of the reasons that adapting an existing plan to a different area do not work. Quite apart from their application to general emergency management, community emergency plans should be considered in the context of other emergency plans — plans at other administrative levels, those that operate at the same level, and any plans developed for specific hazards or by other organisations. Community, provincial, and national emergency plans are multi-sectoral. They include communications, search and rescue, police and security, health, social welfare, and transport and lifelines sectors, and coordinate the emergency work at each administrative level. Sectoral plans (sometimes called “functional plans”) describe the management, resources, and strategies within one of

these six sectors. Organisation-specific plans are useful for members of a given organisation, whether public or private, military, or non-governmental. They describe in detail how that organisation will fulfill its assigned roles and responsibilities. Hazard-specific plans may be developed for hazards such as flood, hazardous materials incidents, and epidemics.

3.3 The Coordination of Disaster Management

The coordination of disaster management is strategic in the whole activities of disaster management. Effective coordination among various development initiatives taken by government is an essential pre-requisite for an integrated approached to disaster and emergency management (Aniefiok Moses, 2011). Coordination involves selecting, training and supervising staff, creating a multi-functional team approach to ensure a holistic response, assigning and clarifying roles and responsibilities of all those involved and structuring communication and information flow (UNHCR, 2007). In an emergency, coordinating within UNHCR and external actors is a crucial aspect of organising. All agencies that have role to play in disaster management must always be ready at all time with their operational plan, guidelines and equipment. By so doing human lives will be saved in emergency situation and there will be less suffering and loss of property (Aniefiok Moses, 2011).

In Nigeria and according to the National Disaster Management Framework, National Emergency Management Agency (NEMA) shall be the coordinating body at the National level, while the State Emergency Management Agency (SEMA) and the Local Emergency Management Authority (LEMA) shall be the coordinating body at the State and Local Government levels respectively. Coordination process shall be time bound, participatory, impartial and transparent in order to achieve the best possible results and impact. Effective coordination in disaster management shall be multi-sectoral, multi-resource and multi-disciplinary. This shall, amongst other things, reduce gaps in services to affected population; duplication of efforts; inappropriate assistance; inefficient use of resources; bottlenecks; impediments and slow reactions to changing conditions.

3.4 Advocacy and Public Enlightenment

The next step in the procedure for disaster and emergency management is systematic advocacy and public education and enlightenment. Policy makers must be willing to support disaster and emergency management through provision of needed resources. This can be achieved through sustained advocacy of every stakeholders particularly the political class (Aniefiok Moses, 2011).

To effectively manage and control disaster, there is urgent needs to develop a mechanism for sustain education of the general public on early warning signs, emergency procedures and mitigating measures in the management of disasters. The strategy involves equipping and improving the skills and knowledge of community members on environmental and health issues. There is need for systematic involvement of the mass media in this campaign. There is also the need for participatory planning and involvement of local people in decision making process to enable them gain confidence and be ready to support all measures to prevent and control disasters and emergencies. Community members must be made to understand that they are real initiators and owners of every mitigating measure to reduce the impact of disaster (Aniefiok Moses, 2011).

Most disasters have taken people unaware. This is due partly to lack of education and information, and partly due to people's unwillingness to keep to disaster and emergency warning alerts. The absence of adequate scientific study and prediction is making the warning alerts impossible. Whereas in developed countries, there is disaster warning system, however, in almost all developing countries, such system is lacking. There is therefore the need to put in place a mechanism for advocacy, public education and warning system. Appropriate techniques for creating awareness on disaster and emergency preparedness, response and mitigation must be put in place. (Aniefiok Moses, 2011).

3.5 Disaster Risk Management Plan (DMP)

When disaster occur, there is need to mobilise human and material resources. This mobilisation effort will aim at minimising the potential impact of disaster on humans, socio-economic activities and the environment – such as; built environment; and the natural environment (Commonwealth of Australia, 2011). NEMA, SEMA and LEMA shall be responsible for facilitating the development of Disaster Risk Management Plan (DMP) in their areas of jurisdiction. The emergency management agencies according to the National Disaster Management Framework (NDMF) shall collaborate with relevant stakeholders to develop review and update DMPs in their areas of jurisdiction to (www.nema.gov.ng):

- Involve the participation of all relevant stakeholders, and establish basic institutional arrangements for disaster risk reduction.
- Define appropriate vision and approaches to disaster risk reduction.
- Specify appropriate arrangements for disaster risk reduction and contingency planning.

- Establish a coordinated information, education and communication system for disaster risk reduction.
- Identify and establish appropriate initiatives for effective public enlightenment programmes.
- Develop sustainable capacity building initiatives for disaster risk reduction.
- Define funding sources.

When there is disaster risk management plan, mobilisation of needed resource become easier thereby build local capacity to efficiently and effectively identify, develop, manage and sustain disaster risk management through the use of appropriate tools and available resources; assess existing and required capability with respect to prevailing and foreseeable hazards; provide a forum for the exchange of knowledge and experience in the areas of vulnerability and risk profile development; strengthen local capability in utilisation of available resources; identify and provide support to States and local governments for the development of vulnerability and risk profile.

4.0 CONCLUSION

Procedures in the management of Emergencies and Disasters fall into the phase of disaster mitigation. In this phase we make attempts to prevent hazards from developing into disasters altogether or to reduce the effects of disasters. Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. This is achieved through risk analysis, which results in information that makes a way for mitigation activities that reduce risk, and other things such as insurance that protects financial investment. The phase is different from the other phases because it focuses on long-term measures for reducing or eliminating risk. The implementation of mitigation strategies is a part of the recovery process if applied after a disaster occurs.

Mitigation measures can be structural in which case one is talking about structures that can be seen such as technological solutions like flood levees and building retrofitting for earthquakes while in non-structural measures one will be talking about things such as legislation, land-use planning and such things as insurance policy. Mitigation is the most cost-efficient method for reducing the effect of hazards although not always the most suitable. Mitigation includes providing regulations regarding evacuation, sanctions against those who refuse to obey the regulations (such as mandatory evacuations), and communication of risks to the public.

You have been reading the unit on Procedures in the management of Emergencies and Disasters. In the next unit, we shall be learning about Roles and collaboration of Agencies in Environmental Health Services in Emergency Situations. Happy reading!

5.0 SUMMARY

In this unit we have learnt that the procedure in disaster and emergency management is all about how to mitigate disaster and emergency so that hazards are prevented from developing into disasters altogether or to reduce the effects of disasters. All emergencies present in some measure unanticipated contingencies and difficulties. In those cases, action has to become innovative and emergent. The plan should specify the coordinating agency. There should be immediate, medium and long term framework to provide for systematic approach to disaster and emergency management. Also, this procedure should make it possible for there to be effective coordination among various development initiatives such as selecting, training and supervising of staff, creating multi-functional team approach to ensure holistic response. Other things will include clarifying roles and responsibilities of all those involved and structuring communication and information flow.

We have learned that advocacy and public enlightenments is another procedure that will help us mitigate disaster. In this case, policy makers must be willing to support disaster and emergency management through provision of needed resources for sustained education of the general public on early warning signs, emergency procedures. Other areas will include; disaster risk management plan. When there is disaster risk management plan mobilisation of needed resource become easier thereby build local capacity to efficiently and effectively identify, develop, manage and sustain disaster risk management through the use of appropriate tools and available resources.

6.0 TUTOR-MARKED ASSIGNMENT

Discuss the following in terms of procedures in disaster and emergency management

i. Coordination of disaster management.
ii. Advocacy and public enlightenment.

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UNIT 3 ROLES AND COLLABORATION OF AGENCIES IN EMERGENCY SITUATIONS

CONTENTS

1.0 INTRODUCTION

When disaster strikes, many agencies, groups, associations, and governments offer humanitarian assistance to countries affected by the natural/man-made disaster. Each of the agencies has different objectives, expertise, and resources to offer, and several hundred may become involved in any single major disaster. If properly coordinated, international humanitarian assistance is beneficial to disaster victims; if uncoordinated, the resulting chaos and confusion will cause a second disaster according to the Pan American Health organisation (PAHO, 2000). In this unit we are going to discuss roles and collaborations of agencies in emergency situations under the following categories—national governments, international humanitarian organisations, and non-governmental organisations (NGOs).

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- identify the role of national government in disaster/emergencies
- explain in-country coordination of disaster/emergencies
- describe the principles of humanitarian assistance in disasters/emergencies

- enumerate the united nations agencies collaborating in disasters/emergencies
- describe the roles and collaboration of NGOs involved in disasters/emergencies.

3.0 MAIN CONTENT

3.1 National Governments

In a disaster, national government must be prepared in advance to assume responsibility for the *coordination* of humanitarian assistance, as this task can hardly be improvised effectively after a disaster. *Operational control* or monopoly by civilian or military institutions is no longer feasible, acceptable, or in the interest of victims (PAHO, 2000). One essential step that the national government should take is to designate a senior official to serve as the focal point for emergency preparedness prior to the disaster to coordinate humanitarian activities in the aftermath of the disaster.

In Nigeria, to designate a person to coordinate such is possible based on the National Emergency Management Agency act. "There is hereby established a body to be known as the National Emergency Management Agency (NEMA)" i.e. act number 12 of 1999 as amended by Act 50 of 1999. On this ground, one can see that it is possible for a person to be designated by law (www.nema.gov.ng). More so, a contingency plan has been developed to provide a basis for coordination of humanitarian minimum response in the event of a major/catastrophic disaster for an initial 10 (ten) days by the Federal Government of Nigeria through the National Emergency Management Agency (NEMA) for 2011-2012. Furthermore, The National Disaster Management Framework (NDMF) provides this mechanism that serves as a regulatory guideline for effective and efficient disaster management in Nigeria. The framework defines measurable, flexible and adaptable coordinating structures, and aligns key roles and responsibilities of disaster management stakeholders across the nation (www.nema.gov.ng).

Once the issue of who to coordinate the disaster is sorted out, needed supplies will include sanitary engineering equipment, food, shelter, and construction materials (PAHO, 2000). There are always delays in the arrival of assistance from abroad. The national government should ensure that immediate needs must be met primarily with locally available resources from provinces or departments adjacent to the area of impact. Humanitarian relief supplies that must come from neighbouring countries or from abroad should be strictly limited to those items that meet specific needs that cannot be supplied locally.

If the national government has ensured that immediate needs have been met with locally available resources, the first humanitarian assistance shipments will arrive at a country's main entry points (airports, seaports, or land border crossings) within 24 to 72 hours of the event, but unloading, sorting, storage, and distribution of supplies will take much longer (PAHO, 2000). The majority of relief supplies usually arrive after the most urgent health needs have already been met with local means. The main problem in all but the least economically developed countries is not the acquisition of large quantities of new supplies in the event of a disaster, but rather the taking advantage of locally available resources. Identification, sorting, classification, inventory, storage, transport, and distribution of items, especially of unsolicited donations, pose another major challenge (PAHO, 2000).

3.2 In-Country Coordination of Disaster

All requests for assistance should be made by a single government body and all offers of assistance should be received by this body for onward transmission to those concerned. In Nigeria, this will usually be the responsibility of the national emergency management agency including relevant ministries such as ministry of health, external affairs and ministry of interior. The national disaster management framework is clear on this (www.nema.gov.ng). Health staff linked to the agency should be the final authority; they should be informed of all proposed medical and environmental health inputs, and should be able to regulate and control any shipments.

United Nations organisations and specialised agencies such as WHO, UNICEF, UNHCR, and the World Food Programme (WFP) are responsible for providing advice and assistance to the government, in accordance with their mandates, and are often represented in the national disaster council (PAHO, 2000). They will also provide technical assistance and material support. International Federation of the Red Cross (IFRC) is normally represented in-country by the National Red Cross or Red Crescent Society. Under certain conditions, joint coordinating arrangements for specialist support may be appropriate.

In some emergency operations, medical advisers (pharmacists, laboratory specialists) may already be attached to the national health ministry. If a major additional requirement for supplies suddenly develops, coordination can often be improved by appointing representatives of the ministries, department and agencies on medical supplies, and advisers on medical supplies and pharmaceutical matters, as joint coordinating secretaries for international relief supplies. Within the health sector, or ministry of environment, a senior health official may be appointed for coordinating the environmental health response or

should act as a liaison and contact point for international agencies and organisations. He or she should be able to communicate with the staff responsible for coordination at the regional and district levels, and should thus be in a position to provide information on needs and resources in the affected area.

The multitude of inputs from international, multilateral and bilateral sources of assistance following a major emergency or disaster have frequently overwhelmed capacities for coordination in recipient countries. In the last few years, OCHA has been responsible for the coordination of humanitarian assistance in complex emergencies (PAHO, 2000).

3.3 Principles of Humanitarian Assistance

Humanitarian assistance is beneficial to disaster victims and can play an important role in the development of the country if it is properly coordinated and responds to real needs (PAHO, 1999). Both donors and authorities in disaster-prone countries should keep in mind the following principles for effective humanitarian assistance (PAHO, 1999):

- **Don't stereotype disasters.**The effects of disasters on the health sector differ according to the type of disaster, the economic and political situation in the affected country, and degree to which its infrastructure is developed.
- **Health relief assistance should be made in consultation with officials designated by the Ministry of Health to coordinate health-related humanitarian assistance.**The Health Disaster Coordinator or as may be designate is a senior health official who serves as a focal point for emergency preparedness and coordinates health-related humanitarian activities.
- **Observe procedures for communication, coordination, and supervision established by authorities in disaster-affected countries.**This is best accomplished through regular meetings as part of the disaster-planning process between national authorities and representatives of donor agencies, NGOs, and other organisations involved in humanitarian assistance.
- **Needs assessment must be carried out promptly by national health authorities in the affected country.**Donors should be informed immediately of the specific type of assistance that is or is not needed. Delays between the identification of needs and the actual arrival of assistance from the outside are unavoidable and sometimes prolonged; resulting in assistance that arrives after needs have been met.
- **Inform donors of what is not wanted or needed.**This is as critical as giving specifications for requirements. Guidelines

should be circulated to all potential suppliers of assistance and diplomatic and consular representatives abroad to prevent ineffective contributions.

- **Donors should not compete with each other to meet the most visible needs of an affected country.**The quality and appropriateness of the assistance is more important that its size, monetary value or the speed with which it arrives.
- **Emergency assistance should complement, not duplicate, measures applied by the affected country.**While some duplication is unavoidable as many countries and agencies worldwide hasten to meet the same needs, real or presumed, much of this duplication can be avoided by making use of the clearing-house functions of the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) regarding health needs. There are well-organised consortia of NGOs and voluntary organisations that coordinate humanitarian assistance.
- **It is unlikely that medical personnel will be required from *abroad.*** The immediate needs of disaster victims must be met within hours of disaster impact. Unsolicited foreign medical teams and volunteers arrive unprepared or too late to be of real assistance to disaster victims. On the other hand, teams from neighbouring countries or regions that share a common culture and language can provide valuable assistance.
- **The need for search and rescue, life-saving first aid and other immediate medical procedures is short-lived.** Special caution is necessary when considering international assistance that is useless once the acute emergency phase has passed. This type of assistance includes personnel, specialised rescue equipment, mobile hospitals, and perishable items.
- **Use of the Internet has become a necessity before and during emergencies.**Electronic communications reduce delays in making pledges and contributions in disaster situations. NGOs and other partners should participate in and encourage the open sharing of information on the Internet.
- **Information must be circulated openly and subjected to review to ensure accountability in the management of humanitarian supplies.** Donors and national authorities must be provided accurate reports on the status of shipments and distribution of supplies. Supply management systems should assist in maintaining inventories, categorise, and sort incoming supplies, and provide donors and national authorities with accurate reports on the status of shipments and deliveries.
- **National, and increasingly, foreign military forces play an important role in humanitarian assistance, particularly in the area of logistics (transportation, communication, and aerial surveys).**Continuous dialogue between civilian and military

authorities and participation in joint exercises will help to ensure that military involvement enhances rather than displaces the influence of national health authorities in emergency situations.

Fig. 7: Military Forces in Humanitarian Assistance
Source: PAHO, 1999

- **Don't overreact to media reports for urgent international assistance.** Despite the tragic images we are shown, get the complete picture and wait until pleas for aid have been formally issued.

3.4 International Assistance

Primary responsibility for disaster relief almost always rests with the government of the affected country (PAHO, 2000). Prior planning is needed both for requesting international health assistance and for handling such assistance. As far as possible, requests should be based on the field assessment of conditions. It may be appropriate to discuss major requests with local WHO offices and with the staff of major international relief agencies in the country, many of whom may have extensive previous experience.

3.5 International Humanitarian Organisations

United Nations Agencies

The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) is responsible for alerting the international community and coordinating international humanitarian response following all types of disasters. In addition to its coordination function, OCHA can also field a United Nations Disaster Assessment and Coordination (UNDAC) team to assist in the general assessment of needs and on-site coordination

during the initial relief phase (PAHO, 2000). In the Americas, there is a regional UNDAC. OCHA's mandate is limited to humanitarian *response*. Overall responsibility for *preparedness and mitigation* in the U.N. system has been assigned to the United Nations Development Programme (UNDP), as part of the approach of integrating disaster management into the development process (PAHO, 2000). At the country level, the U.N. Disaster Management Team (DMT) is made up of representatives of all agencies of the U.N. system, including PAHO/WHO in the Americas. This team is chaired by the U.N. coordinator in the country, who is usually the UNDP Resident Representative. In some countries, the DMT also includes representatives from donor governments and NGOs (PAHO, 2000). The DMT aims to offer a coordinated, multi-sectoral approach and collaboration to the authorities of the affected country.

Forms and functions of international assistance

In health services and especially in the environmental health sector, the international assistance that can be provided may include (PAHO, 2000):

- Expertise and assistance with planning and implementing activities
- Components for emergency repairs to damaged water-supply systems
- Tanks, pumps, piping components and tools for emergency water supplies for large concentrations of people
- Resources (funding for vehicles, fuel and spare parts) to support the emergency delivery of water by road tanker
- Laboratory and water-testing equipment.

Integrating international staff and local specialists

According to PAHO (2000), well-qualified international staff can make a substantial contribution to relief work. In particular:

- They show people that, despite the overwhelming problems, there are ways of imposing order on the situation.
- They recognise that what people can do in a short time is limited and help local officials focus on what they can actually cope with. They encourage local staff to seek out those problems where intervention is likely to be both feasible and effective.
- They encourage staff to use information as a management tool, and to use appropriate methods to ensure that the information that they use is accurate and representative.

Experience suggests the importance of integrating international staff and local specialists. The latter are more likely to be aware, for instance, of local practices in the use of water sources and other local resources, and be better able to assess the feasibility of adaptations for emergency use. They will also be more aware of seasonal variations and local organisational constraints, and be better able to communicate directly with survivors.

Guidelines on Employment of International Assistance Teams

Ideally, countries should establish guidelines on the employment of international assistance teams. The guidelines should cover the following areas (PAHO, 2000):

- Ability to meet internationally recognised standards for qualifications and proficiency.
- Self-sufficiency in personal needs and equipment;
- Commitments to remain in country for a certain length of time, or until certain activities have been completed.
- Ability to react sufficiently quickly and with sufficient staff and other resources.
- Knowledge of the country, or experience in the technical area concerned.
- Recognition by, and support from, the United Nations agency concerned (e.g. UNHCR in refugee emergencies).
- Capacity and commitment to enable members of the local population to participate in their operations.

It is important to avoid situations in which teams arrive with high-technology equipment, remain for only short periods of time, and then withdraw without stabilising the situation in the longer term. Sophisticated equipment for water-supply systems or vector control is useless in the longer term if supplies of spare parts are not continued, qualified repair and maintenance staffs are not available locally, and local people are not properly trained to operate the equipment. Similar problems have occurred in refugee operations, where international specialists have built sophisticated, electronically operated water-treatment and pumping systems and then departed, leaving no blueprints and making no arrangements for the supply of spare parts or planned maintenance. Such arrangements are expensive and often fail more catastrophically than those they replace.

Every country is a potential source of health humanitarian assistance for some other disaster-stricken nation (PAHO, 2000). Bilateral assistance; whether personnel supplies, or cash, are probably the most important source of external aid. Several inter-governmental or regional agencies

have established special funds, procedures, and offices to provide humanitarian assistance. Below are selected examples to illustrate the broad variety of extra-national agencies that provide health assistance after natural disasters. It is not intended to be a comprehensive list, and not all experienced and dedicated agencies providing valuable emergency assistance are included.

3.6 United Nations Agencies

United Nations Office for the Coordination of Humanitarian Affairs (OCHA)

The United Nations plays an important role in providing assistance in response to major humanitarian emergencies, as well as in promoting disaster reduction as part of the development plans of countries (PAHO, 2000). The UN Office for the Coordination of Humanitarian Affairs (OCHA), which replaced the Department of Humanitarian Affairs in 1998, coordinates the UN System's response to major humanitarian emergencies, both natural and man-made, and promotes action to improve disaster prevention and preparedness. OCHA's responsibilities after disaster are, at the request of the disaster-stricken country, to assess needs, issue inter-agency appeals for funding humanitarian assistance, organise donor meetings and follow-up arrangements, monitor the status of contributions in response to appeals, and issue reports regarding developments. The Resident Representative of the United Nations Development Programme (UNDP) in individual countries reports to OCHA, and provides a channel for requests from governments to the international community. In addition, United Nations disaster management teams, country-level representatives of the U.N. agencies have been established in many countries, make arrangements to coordinate relief activities in anticipation of an emergency. To permit rapid response to emergencies, OCHA has established a United Nations Disaster Assessment and Coordination Team (UNDAC), which can be deployed immediately to an affected country to help local and national authorities determine relief requirements and carry out coordination.

- New York office: OCHA, United Nations, S-3600, New York, NY 10017, USA
- Geneva office: OCHA, United Nations, 8-14 ave. de la Paix, 1211 Geneva 10,
- Switzerland. Website: http://www.relifweb.int/ocha_ol.

World Health Organisation (WHO)

WHO is responsible for coordinating international health action. The Pan American Health Organisation (PAHO) and other WHO regional

offices act as focal points for national health authorities and donors after disasters in their respective areas. WHO can provide technical cooperation in assessing health-related needs, coordinating international health assistance, managing the inventory and distribution of relief supplies (see Annex II), carrying out epidemiologic surveillance and disease control measures, assessing environmental health, managing health services, formulating cost estimates for assistance projects, and procuring humanitarian supplies. WHO and its regional offices can provide limited material assistance by reprogramming country development activities or from other sources (PAHO, 2000).

WHO, Avenue Appia 20, 1211 Geneva 27, Switzerland
Website: http://www.who.int/eha

United Nations Children's Fund (UNICEF)

While primarily concerned with building health, education, and welfare services for children and mothers in developing countries, UNICEF also has mechanisms to meet their immediate needs in emergencies (PAHO, 2000). Working closely with U.N. agencies and NGOs; UNICEF emergency interventions focus on the provision of health care, nutrition, water supply and sanitation, basic education, and the psychosocial rehabilitation of traumatised children. UNICEF has a substantial cash reserve for use in emergencies, allowing the diversion of funds from regular programmes to emergency operations pending the receipt of donor contributions.

UNICEF, 3 United Nations Plaza, New York, NY 10017, USA
Website: http://www.unicef.org

World Food Programme (WFP)

The WFP furnishes large amounts of foodstuffs in support of economic and social development projects in developing countries. In addition, it has substantial resources with which to meet emergency food needs, some of which can be furnished from project food stocks already in a disaster-stricken country. The WFP purchases and ships food needed in emergencies on behalf of donors, and cooperates closely with WHO in the nutritional monitoring of emergencies.

World Food Programme, Via CesareGiulio Viola, 68, Parco dei Medici, Rome 00148, Italy
Website: http://www.wfp.org

Food and Agriculture Organisation of the United Nations (FAO)

The FAO provides technical cooperation and promotes investment in long-term agricultural development. It also works to prevent food shortages in the event of widespread crop failures or disasters. Through the Global Information and Early Warning system, the FAO issues monthly reports on the world food situation. Special alerts identify, for governments and relief organisations, countries threatened by food shortages. In both relief and short-term rehabilitation operations, FAO specialists are called on to help farmers re-establish production following floods, outbreaks of livestock disease, and similar emergencies.

FAO, Viale dell Terme di Caracalla, 1-00100 Rome, Italy. Website: http://www.fao.org

3.7 Non-Governmental Organisations (NGOs)

A non-governmental organisation (NGO) according to information from http://www.ngo.org is any non-profit, voluntary citizens' group which is organised on a local, national or international level. Task-oriented and driven by people with a common interest, NGOs perform a variety of services and humanitarian functions, bring citizen concerns to Governments, advocate and monitor policies and encourage political participation through provision of information. Some are organised around specific issues, such as human rights, environment or health. They provide analysis and expertise, serve as early warning mechanisms and help monitor and implement international agreements. Their relationship with offices and agencies of the United Nations system differs depending on their goals, their venue and the mandate of a particular institution. In this wise, below are NGOs involved in disaster and emergencies as documented by (PAHO, 2000).

Adventist Development and Relief Agency (ADRA)

In 1983, the Seventh-day Adventist World Service was reorganised under the name Adventist Development and Relief Agency. Active in development projects in 143 countries, ADRA also provides humanitarian assistance in disaster situations in the form of medical assistance, shelter, emergency supplies, and technical assistance.

ADRA Central Office, 12501 Old Columbia Pike, Silver Spring, MD 20904, USA.Website: http://www.adra.org

American Council for Voluntary International Action (Inter-Action)

Inter-Action is a coalition of some 150 US-based, non-profit international development, disaster relief, and refugee assistance agencies. Inter-Action conducts advocacy campaigns on behalf of its members, coordinates and promotes relief and development activities, and operates as an information clearinghouse. Inter-Action, 1717 Massachusetts Ave. NW, Suite 801, Washington, DC 20036, USA.
Website: http://www.interaction.org

CARE (Cooperative for Assistance and Relief Everywhere)

CARE International is a confederation of 10 national members in North America, Europe, Japan, and Australia. Based in Belgium, it manages more than 340 relief and development projects in 62 countries in Africa, Asia, Latin America, and Eastern Europe. CARE USA, which oversees projects in Latin America, is based in Atlanta and provides emergency relief in the form of food, hand tools, and similar goods to disaster-affected communities. Its post disaster projects include rehabilitation of water supply systems, rebuilding houses, and provision of basic sanitation or health facilities.

CARE USA, 151 Ellis Street, NE, Atlanta, GA 30303-2439, USA
Website: http://www.care.org

CARITAS Internationalis

CARITAS Internationalis is an international confederation of 146 Catholic organisations in 194 countries and territories. It promotes, coordinates, and supports emergency relief and long-term rehabilitation activities. CARITAS Internationalis, Palazzo San Calisto 16, I-00120 Citta del Vaticano, Vatican. Web site: http://www.caritasint.org

Catholic Relief Services (CRS)

CRS, based in the United States, responds rapidly to emergencies by providing food, clothing, medical supplies, and shelter. Assistance is coordinated with the national CARITAS organisation and the local Catholic clergy. CRS employs health professionals such as public health advisers and nutritionists who work closely with national health authorities. Catholic Relief Services World Headquarters, 209 W. Fayette St., Baltimore, MD
21201-3443, USA
Website: http://www.catholicrelief.org

International Committee of the Red Cross (ICRC)

ICRC is a private, Swiss, and strictly neutral humanitarian organisation based in Geneva. It works to protect and assist victims of armed conflict or disturbances. If a natural disaster should befall war refugees, for example, ICRC can provide aid in kind and services, particularly nutritional and medical assistance. ICRC, 19 Ave. de la Paix, 1202 Geneva, Switzerland
Website: http://www.icrc.org

International Council of Voluntary Agencies (ICVA)

ICVA is an international association of nongovernmental, not-for-profit organisations who are active in the fields of humanitarian assistance and development cooperation. It does not implement relief or development projects itself, but provides an international liaison structure for voluntary agency consultation and cooperation.

ICVA, 48, chemin de Grand-Montfleury, 1290, Versoix, Switzerland
Website: http://www.icva.ch

International Federation of Red Cross and Red Crescent Societies (IFRC)

IFRC is an international humanitarian organisation, composed of and representing 175 member national societies, with an international secretariat based in Geneva. It coordinates humanitarian assistance internationally and operates within an affected country through the member national society or its own staff if no local society exists. The IFRC obtains cash donations and specific emergency items through international appeals, and donates them through the national society. Assistance provided by IFRC or national societies consists of food, shelter, water and sanitation, medical supplies, telecommunications, volunteer workers, and, in some cases, self-supporting field hospitals and medical teams. Its long experience and considerable flexibility and resources make it a most valuable non-governmental source of support and cooperation with the health sector. IFRC, PO Box 372, CH1211 Geneva 19, Switzerland. Website: http://www.ifrc.org

Lutheran World Relief Federation (LWR)

LWR represents Lutheran churches of various denominations in the United States. It can provide in-kind assistance following disasters as well as loans for long-term reconstruction.
Lutheran World Relief, 390 Park Avenue South, New York, NY 10016, USA.Website: http://www.lwr.org

Médecins Sans Frontières (MSF)

In 1971, a group of French doctors established MSF, a humanitarian aid organisation that provides emergency medical assistance to vulnerable populations in more than 80 countries. In countries where health structures are insufficient or even non-existent, MSF collaborates with national health authorities, working in rehabilitation of hospitals and pharmacies, vaccination programmes, and water and sanitation projects. In addition to providing medical teams, MSF transports and distributes emergency supplies. Médecins Sans Frontières International Office, 39, Rue de la Tourelle-1040, Brussels, Belgium. Website: http://www.msf.org

Mennonite Central Committee (MCC)

MCC is the relief and development arm of the North American Mennonite and Brethren in Christ churches. Founded in 1920, MCC has more than 700 volunteers in 50 countries involved in food relief, agriculture, health, education, and social services. MCC provides volunteer personnel for cleanup, repair, and reconstruction, as well as emergency supplies in disaster situations.
Mennonite Central Committee, PO Box 500, Akron, PA 17501-0500, USA.Website: http://www.mennonitecc.ca

Oxfam (Oxford Committee for Famine Relief)

Oxfam was founded in England to send relief supplies to refugees in Europe during World War II. Today, Oxfam International is a network of 11 humanitarian organisations based in Australia, Belgium, Canada, Hong Kong, Ireland, the Netherlands, New Zealand, Quebec, Spain, the United Kingdom, and the United States. The focus of their work is to address issues of poverty, providing financial, technical, and networking assistance to grassroots groups undertaking community development. During disasters, Oxfam provides funding and technical support for immediate and long-term assistance. It has developed considerable expertise in managing refugee camps, nutritional relief, and housing projects. Oxfam America, 26 West Street, Boston, MA 02111, USA. Website: http://www.oxfamamerica.org; Oxfam U.K., 274 Banbury Rd., Oxford, OX2 70Z, UK; Website: http://www.oxfam.org.uk

Salvation Army

Founded in 1865 in London; the Salvation Army works in more than 100 countries to provide social, medical, educational, and other community services. In disaster situations, national affiliates provide health-care assistance and emergency supplies. It also operates an

emergency radio network that assists in family tracing through a network of radio ham operators. Salvation Army International Headquarters, 101 Queen Victoria Street, London EC4P 4EP, UK
Website: http://www.salvationarmy.org

Save the Children Fund/Federation

Save the Children Fund (in the United Kingdom) and Federation (in the United States) are active in more than 65 countries. Involved in long-term development projects, in disaster situations they provide food, water, shelter, and other critical supplies, and assistance in reconstruction and rehabilitation of services. Save the Children (U.S.), 54 Wilton Road, Westport, CT 06880, USA
Website: http://www.savethechildren.org; Save the Children (U.K.), 17 Grove Lane, London, SE5 8RD, UK; Website: http://www.scfuk.org.uk

Voluntary Organisations in Cooperation in Emergencies (VOICE)

VOICE is a network of European NGOs that are active in emergency aid, rehabilitation, disaster preparedness, and conflict prevention. Created in 1992, VOICE currently has about 65 members. The main purpose of VOICE is to foster links between the NGOs and facilitate their contact with the European Union, particularly ECHO.
VOICE, 10 Square Abiorix, B-10000 Brussels, Belgium
Website: http://www.oneworld.org/voice

World Council of Churches (WCC)

The Council is a fellowship of more than 332 Protestant and Orthodox denominations in 120 countries and territories around the world, with its headquarters in Geneva. Through its member churches, it provides humanitarian assistance after disasters. World Council of Churches, PO Box 2100, 1211 Geneva 2, Switzerland
Website: http://www.wcc-coe.

4.0 CONCLUSION

Roles and Collaboration of Agencies in Emergency Situations is very important and usually when there is a disaster/emergency, agencies, groups, associations, and governments are ready to render humanitarian assistance to country affected. National government at this juncture must be prepared to assume responsibility for the *coordination* of humanitarian assistance. And if the national government has ensured that immediate needs of displaced population have been met with locally available resources, other health relief assistance should be made in consultation with officials designated by the Ministry of Health to

coordinate health-related humanitarian assistance. Consequently the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) takes up the responsibility for alerting the international community and coordinating international humanitarian response following the type of disaster. In addition to its coordination function, OCHA will also field a United Nations Disaster Assessment and Coordination (UNDAC) team to assist in the general assessment of needs and on-site coordination during the initial relief phase. In health services and especially in the environmental health sector, the international assistance that can be provided will include expertise and assistance with planning and implementing activities as well as components for emergency repairs to damaged water-supply systems. As it has been noted in this unit that NGOs perform a variety of service and humanitarian functions including bringing citizen concerns to Governments, advocate and monitor policies and encourage political participation through provision of information, national governments must ensure that NGOs invited to participate in disaster activities are there to fulfill their mandate in line with international best practices of coordination and promotion of relief and development activities. I am indeed happy that you have completed unit 8. In unit 9 we shall be presenting you with issues relating to resources mobilisation, allocation and management in Environmental Health Services. Please enjoy the unit.

5.0 SUMMARY

In this unit, we have discussed the roles and collaborations of agencies in emergency situations such that we see that national government must be prepared in advance to assume responsibility for the *coordination* of humanitarian assistance, as this task can hardly be improvised effectively after a disaster. Going further, we know that there is also policy support in the Nigeria context in other to designate a person to coordinate disaster as well as in the establishment of a body to be known as the National Emergency Management Agency (NEMA)" set up by act number 12 of 1999 as amended by Act 50 of 1999.

On in-country coordination of disaster, we know now that all requests for assistance should be made by a single government body and all offers of assistance should be received by this body for onward transmission to those concerned. In Nigeria, this will usually be the responsibility of the national emergency management agency including relevant ministries such as ministry of health, external affairs and ministry of interior. The importance of the United Nations organisations and specialised agencies such as WHO, UNICEF, UNHCR, and the World Food Programme (WFP) have been noted as they are responsible for providing advice and assistance to the government, in accordance

with their mandates, and are often represented in the national disaster council.

We have equally discussed the principles of humanitarian Assistance and is aware that humanitarian assistance is beneficial to disaster victims in that it can play an important role in the development of the country if it is properly coordinated and responds to real needs. Both donors and authorities in disaster-prone countries should keep in mind the principles for effective humanitarian assistance such as avoiding disaster *stereotyp.*

We have learned as well that the United Nations plays an important role in providing assistance in response to major humanitarian emergencies, as well as in promoting disaster reduction as part of the development plans of countries. World Health Organisation (WHO), United Nations Children's Fund (UNICEF), World Food Programme (WFP) are examples of UN agencies while Non-governmental organisations (NGO) such as Adventist Development and Relief Agency (ADRA), American Council for Voluntary International Action (Inter-Action), CARE (Cooperative for Assistance and Relief Everywhere) involved in disaster and emergencies have been discussed and their roles and mode of collaboration reiterated.

6.0 TUTOR-MARKED ASSIGNMENT

i. List four United Nations agencies and write notes on their roles and collaborations.
ii. Name five NGOs involved in disaster/emergency activities and write notes on any three.

7.0 REFERENCES/FURTHER READING

Pan American Health Organisation (2000).Natural disasters—protecting the public's health.Washington: PAHO.

National Emergency Management Agency (establishment, etc.) Act 1999 from(www.nema.gov.ng)

The National Contingency Plan (NCP), Nigeria from (www.nema.gov.ng)

Pan American Health Organisation (1999). Humanitarian Assistance in Disaster Situations:a guide for effective aid. Washington: PAHO.

The National Disaster Management Framework (NDMF) of Nigeria from (www.nema.gov.ng)

http://www.ngo.org/ngoinfo/define.html.

UNIT 4 RESOURCES MOBILISATION, ALLOCATION AND MANAGEMENT IN ENVIRONMENTAL HEALTH SERVICES

CONTENTS

1.0 INTRODUCTION

In order to ensure appropriate resources mobilisation, allocation and management in emergencies, governments and not just ministries of health is to build political commitment for risk management in all aspects of disaster and emergency management. Commitment from legislators, policy-makers, other ministries (such as education, agriculture, and water and sanitation), and local government and development partners is important to address risk reduction in a multi-sectoral approach. Advocacy to these stakeholders is a key intervention.(www.searo.who.int/en/section1430/).

Disasters and emergencies cover three dimensions of development such as economic, social and environment. From an economic viewpoint, development resources are lost when a disaster wipes out the gains of investments. Also, emergency and disaster events shorten the life span of other investments. Disasters have a negative impact on the incentive for further investment and curtail potential gains. Policy-makers and development planners should consider that disaster management, besides saving people's life and property, is directly linked to socioeconomic development and maintaining the sustainability of the environment. Risks may be reduced if clear and practical objectives are

linked to national and local policy as well as to the socioeconomic, environment, urban and regional development plans.

In this unit, my dear students, we will be discussing resources mobilisation, allocation and management in emergencies.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- identify emergency contingency plan and its usefulness
- describe resource mobilisation
- discuss the role of community participation in disaster management
- state the principles of good humanitarian donor ship
- discuss recommendations for recipient authorities.

3.0 MAIN CONTENT

3.1 National Contingency Plan (NCP)

Elaborate resources mobilisation, allocation and management during an emergency, should be as a result of the plan which will show how things should be run when the emergency occur. A recent publication by Pan American Health Organisation, says thus "Humanitarian supply logistics cannot be improvised at the time of the emergency. Countries and organisations must see it as a cornerstone of emergency planning and preparedness efforts" (PAHO, 2001). This statement goes to show that there is need for a document to be in place before disaster strikes. In this wise, the document in the case of Nigerian government is the plan for emergency preparedness efforts. This plan is called "National Contingency Plan" (www.nema.gov.ng). It has multi-hazard scenario approach to ensure the accommodation of forecasted hazards, as well as those that have not been forecasted. It is as well a multi-hazard contingency plan with a focus on the hazards with the highest probability of occurrence and severity in any part of the country such as flood, conflicts, and drought and disease epidemics.

In this plan, the National Emergency Management Agency (NEMA) is mandated to coordinate disaster management in all its ramifications in the country. Furthermore, this multi-hazard contingency plan creates the platform to bring several humanitarian players together and acts as a framework for making contingency arrangements for disaster response. The sectoral response took into cognisance preparedness, minimum response and comprehensive response within the following Clusters: Water and Sanitation (WASH); Food and Non Food Items (NFIs);

Emergency Shelter; Telecommunication and Logistics; Basic Education; Security and Protection; Camp Management; Health, Reproductive Health and HIV AIDS. The Contingency Supply requirements (i.e. personnel, supplies and equipment) and budget was also developed to ensure proper resource mobilisation and functioning of the various sectors during the agreed period of minimum response. The document also made adequate arrangement for trainings, simulations and review dates.

In the plan also, humanitarian assistance will be organised by observing the principles of humanity, neutrality impartiality and independence (www.nema.gov.ng). Planned responses will ensure that immediate needs are targeted. In operation, the plan will adopt relevant internationally accepted guiding principles and laws to ensure that rights based approach are emphasised. Therefore, the Humanitarian Charter and Minimum Standards in Disaster Response (SPHERE Project) will serve as the operational basis for response and provision of humanitarian assistance (www.nema.gov.ng).

3.2 Resource Mobilisation

In view of the above, collaboration prior to, during, and after an emergency or disaster should be well coordinated because partners would know what their roles are as well as provide opportunities for resource mobilisation. NEMA will collaborate with relevant agencies and ministries of health and Ministry of Foreign Affairs as well as the military and paramilitary - Police Force, CSOs, International Organisations and the UN system, to monitor situations and potential threats such as poor coordination and emergency situations such as poor delivery of sectoral services to ensure adequate response. In responding to emergencies, additional programmes may be developed to support humanitarian action such as post-incident rehabilitation and recovery efforts within the respective sector.

3.3 Community Participation

While resource mobilisation is going on as a result of the emergency, the contingency plan must as well provide for community participation. The involvement of the community is essential for reducing vulnerability to disasters, for facilitating recovery after a disaster has struck, and for stimulating community organisation which is the basis for sustainable development (WHO, 2002).

It is well known that the first responders to an emergency situation are the local community. As such, they should have access to information and should be engaged in all emergency preparedness activities. It is

also necessary to integrate community contingency action plans in the national plan for disaster and risk reduction (www.searo.who.int/en/section1430/). Education and training for the community during the non-emergency phase in cooperation and collaboration with civil society organisations, private sector and other agencies are essential. All these may ensure active participation of the community to prepare for and respond to an emergency.

In putting together the above mentioned strategies, there is a need to ensure that in all these the public is engaged so that they are an integral part in these issues, policies, plans and regulations. For these strategies to be meaningful, they should be geared towards empowering and engaging the general public. At the same time, they should translate into provision of financial resources and proper implementation. Vulnerable communities are the same communities that translate and shape preparedness appropriately into action and as such should be of prime consideration in any advocacy or political effort. If this is ensured, political commitment can give rise to practicable and appropriate policies, guidelines, plans and investments for preparedness and response.

3.4 Principles of Good Humanitarian Donorship

Humanitarian Aid should Respect the Rights of Affected Communities and the Fundamental Humanitarian Principles.

We now put forward a few useful recommendations for recipient authorities and communications media which deal with key issues with regard to donations and humanitarian assistance at this stage of the emergency situation - resources mobilisation, allocation and management of emergency. The objectives of humanitarian action are*: to save lives, alleviate suffering and to maintain human dignity during and in the aftermath of a crisis.* The arrival of large quantities of donations in a country affected by a disaster or emergency results in a major challenge as regards their organisation and management by humanitarian actors, and can result in relevant and very valuable aid or in an additional burden which is difficult to manage and administrate. The technical and logistical challenges which this task involves are compounded by an additional difficulty in that often many of the donations are inappropriate, sent in haste and little in line with the real needs of the affected population or populations. The haste to provide emergency humanitarian assistance should not override the need to pay attention to the rights of the people affected by disasters. It is essential that donations contribute to safeguarding people's dignity during a crisis (PAHO, 2009).

Donations should be Based on the Assessment of Damage and the Analysis of Needs (DANA)

The request for donations from the affected country must be based on the initial results of the DANA (PAHO, 2009) and it is important that donors and communications media consult the national authorities (NEMA in the case of Nigeria) or humanitarian agencies present in the field to be aware of what is needed and what it not necessary.

Does not Contribute to Promote and/or Reproduce Myths which Tend to Circulate during a Disaster Situation

The earthquake and tsunamis which occurred in December 2004 took the lives of over 280,000 people (PAHO, 2009). These were the largest disasters which can be recalled in South Asia. However, in the days following the disaster, reports from the communications media were warning of a second calamity which was approaching: these referred to epidemics of dangerous diseases which could occur as a result of the decomposition of thousands of bodies.

"Worried that rotting corpses could take more lives by spreading disease, health officials ordered them collected in city trucks and dumped in mass graves. Many were buried before they could be identified." *(Los Angeles Times)* (PAHO, 2009).It was all based on myth. Dead bodies do not pose an urgent health threat in the aftermath of a disaster. This is one of several enduring myths about disasters that experts from PAHO/WHO have been trying to counter for nearly two decades… (PAHO, 2009). The haste to dispose of bodies requires valuable resources – such as vehicles, fuel and human effort -, when the priority should be finding and helping the survivors.

Promote Donations in Cash as much as Possible

The main characteristic of a cash donation is its flexibility. Promote its use to carry out immediate actions as well as for recovery processes, since in the relief phase it ensures that what is most needed can be obtained nearby and in countries bordering on that affected; in later phases, money is used to facilitate programmes and projects which seek to rebuild populations' livelihoods.

Aid Provided to the Affected Country must Complement and not Duplicate Efforts

When a disaster occurs, many countries and organisations worldwide hastily seek to cover the needs which arise immediately after the event without knowledge of actions which are being carried out in-country and

the resources being sought to implement them. Donors must be aware of actions on the part of the affected country before giving donations. In this way, aid is organised and efforts covering the same needs over and over again are avoided. It is also important to know which aid is being provided by other donors and to whom. There are efficient tools which can be consulted on internet to facilitate and become familiar with this kind of information.

SELF-ASSESSMENT EXERCISE

i. Describe national contingency plan with regard to emergency risk reduction and preparedness.
ii. Discuss resource mobilisation in emergency management.
iii. Describe community participation in relation to emergency management.

3.5 Recommendations for Recipient Authorities

Facilitate Damage Assessment and Analysis of Needs (Dana) and Share This Information Quickly and Opportunely to Orient Actions of Solidarity and Donations

Having discussed the principles of good donor ship above, it will be necessary to present some recommendation for recipient authorities to enable appropriate management of disaster. Knowing the damage and the real needs will make it possible to determine in greater detail the kind of assistance that is being requested, it is important that in just a few hours preliminary estimates are presented of the needs for assistance before donors begin to commit their emergency funds. Determine what is needed and be categorical about what is not needed. When supplies are requested, avoid generic lists. For example, if you request "food", you could specify quantities, type, local customs etc. Be precise since such requirements bring more concrete and effective aid. Is it generally more costly to manage or do away with inappropriate donations which were never sought. On the other hand, it is recommended to mention clearly the level of priority of what is requested which will depend on the needs identified. These indications should be circulated to as many possible suppliers of assistance and diplomatic and consular representatives abroad.

3.6 Strengthen the Relationship and Inter-Sectoral Coordination between National Emergency Authorities

The national disaster prevention and response body (i.e. NEMA in the case of Nigeria) is usually responsible for the coordination of humanitarian assistance, in collaboration with the Ministry of Foreign

Affairs (PAHO, 2009). National Ministries take part in emergency actions and it is recommended that they establish coordination mechanisms by priority sectors as well as on an inter-sectoral basis. The Ministry of Foreign Affairs and the international cooperation entity are responsible for the request for international aid and the receipt and dissemination of information. Diplomatic missions and Consulates which represent the affected country abroad play a fundamental role in the management, coordination and in the seeking of aid from the international community.

3.7 Set up and Promote the Use of Efficient Mechanisms to Receive Donations

Cases where the sending of humanitarian aid has been stopped or delayed make up numerous anecdotal (based on secondhand accounts) stories on the part of civil servants working in aid. If a protocol of procedures for the entry of humanitarian aid to the affected country does not exist, the Ministry of Foreign Affairs must ensure that this mechanism is created and conveyed promptly together with the request for international aid. It is also necessary to facilitate simplified customs procedures. You can consult the Model Agreement in Customs Facilitation in Humanitarian Assistance between the United Nations and a State/government drawn up by OCHA (The mission of the Office for the Coordination of Humanitarian Affairs) in 1996 in order to establish measures to accelerate the import, export and shipment of relief aid and articles belonging to relief personnel in disaster and emergency situations (PAHO, 2009).

Facilitate Mechanisms for Information Exchange with Actors Involved in the Emergency

In emergency situations, information must circulate freely and be scrutinised (observe something closely) to ensure that the management of supplies is taking place in a responsible manner. Reports should be provided on the status of goods sent and the distribution of supplies. On the other hand, in many cases, efforts to compile data concerning the population's needs can be fragmented and as such, have little scope. To this end, each country in Latin America and the Caribbean has institutions which are responsible for coordination and in some cases these have coordination centres for humanitarian aid (PAHO, 2009). It is recommended to get to know these mechanisms and do not create new ad-hoc ones at the time of the crisis in order to establish a link between the donor community, national authorities, the United Nations system, customs authorities and other institutions responsible for giving, receiving, sorting and distributing aid, with the aim of consolidating an essential channel to request and manage donations (PAHO, 2009).

Establish and Promote the use of Mechanisms and/or Tools to Identify, Organise and Distribute Donations which are being Received

It may happen that aid begins to arrive very quickly and the affected country still has not set up an appropriate register of supplies, and is therefore losing valuable information to improve the administration of relief. It is a priority to register and organise data about what is entering the country, where it will go and who is donating it. Systems such as LSS/SUMA10 (System for the Management of Humanitarian Supplies) – facilitate the management and organisation of donations and promote transparency and responsibility (PAHO, 2009). On the other hand, cash donations, contributions which enter through multilateral mechanisms and specialised NGOs should also be registered to avoid duplication of efforts or of resources. The organisations themselves monitor the aid they are providing and access to this information will allow you to set up improved organisation of the assistance received in-country (PAHO, 2009).

Plan and Maintain Communication and Coordination with Donors

Get to know the donors' assistance mechanisms; do not wait for an emergency to make contact with them (PAHO, 2009). In many cases, donor countries have defined procedures, ways of working, support mechanisms and implementation times for emergency situations which enable them to plan support before a disaster occurs. On the other hand, donors which support humanitarian activities need to be informed. Set up and comply with a periodical time-frame for presenting information. In addition to reports, electronic communications resources such as web pages or e-mail lists facilitate straightforward and rapid feedback with the donors.

Maintain Fluid Channels of Information and Communication with the Communications Media

In a disaster, the communications media demand official information (PAHO, 2009). It is true that the press tends to point out failures in the system more than the achievements made, but this should not be a reason for distancing yourself from the communications media and not providing information. Do not wait for a disaster to occur to establish relations, try to select official spokespersons in advance in order to train them. In addition, you need to assess which is the most appropriate way to present information (press releases, press conferences, interviews). Contact and responsible exchange with the media are also a symbol of transparency and technical and political responsibility.

4.0 CONCLUSION

Risk management is the key approach in disaster reduction. It is a method that the health sector should apply in its work in emergency health preparedness and in its broader planning, development and implementation. By the time this is done, the health sector would show the way in the mainstreaming (integration) of risk management in the work of other sectors. Various strategies and options are available to address the challenges and limitations in the current disaster and emergency management. These are also needed to enhance preparedness and improve risk and vulnerability reduction. Although such approaches require financial and technical resources, the implementation of strategies is more the result of cooperation and collaboration of sectors wherein roles are defined, and resources are maximised so that goals and objectives are achieved. You have been reading the unit which is on resource mobilisation, allocation and management in Environmental Health Services. I hope you enjoyed reading it. In the next unit,, we shall be discussing the Roles of Environmental Health Officers in Emergency Situations. I urge you to enjoy it.

5.0 SUMMARY

You have earlier learnt that in National contingency plan, elaborate resources mobilisation, allocation and management during an emergency, should be as a result of the plan which will show how things should be run when the emergency occur. On resource mobilisation, now know that collaboration prior to, during, and after an emergency or disaster should be well coordinated because partners would know what their roles are as well as provide opportunities for resource mobilisation. Community participation must ensure that the involvement of the community for reducing vulnerability to disasters, for facilitating recovery after a disaster has struck, and for stimulating community organisation which is the basis for sustainable development. On principles of good humanitarian donor ship, we have to ensure that the arrival of large quantities of donations in a country affected by a disaster or emergency should not results in a major challenge as regards their organisation and management by humanitarian actors, and on recommendations for recipient authorities, it is important that in just a few hours preliminary estimates are presented of the needs for assistance before donors begin to commit their emergency funds. We have to determine what is needed and are categorical about what is not needed. When supplies are requested, avoid generic lists.

6.0 TUTOR-MARKED ASSIGNMENT

i. Discuss the principles of good humanitarian donorship.
ii. Enumerate the recommendations for recipient authorities.

7.0 REFERENCES/FURTHER READING

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UNIT 5 THE ROLES OF ENVIRONMENTAL HEALTH OFFICER (EHO) IN EMERGENCY SITUATIONS

CONTENTS

1.0 INTRODUCTION

Disasters are worldwide phenomena that have occurred throughout human history. However the dramatic increase in human population during the twentieth century has increased the impact of disasters on human population centres (DHS, 1999). According to the Centres for Disease Control and Prevention (CDC) in a recent report published by Twin Cities Metro Advanced Practice Center (APC, 2007), a disaster overwhelms the affected community and requires outside assistance. An emergency is not a disaster in itself, but an event requiring an immediate response. During a natural disaster or other emergency, such as a terrorist attack, the primary role of the public environmental health system is to provide services essential for protecting and ensuring the wellbeing of the people in affected areas, with an emphasis on prevention and control of communicable diseases and exposures to hazardous materials.

Dear students, the purpose of this unit is to describe general and specific response actions that the environmental health officer (EHO) (i.e. sanitarians) could be responsible for in the event of a natural disaster, an industrial or transportation related incident, or a deliberate act of terrorism. This includes basic services such as food safety, sanitation, vector control, waste management and medical/infectious waste that need to be reestablished.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- identify the roles of EHOs in emergencies and disasters
- discuss the prevention and mitigation activities of the EHOs in emergency and disasters
- discuss also the preparedness, response and recovery activities of the EHOs in emergencies and disasters
- appreciate the immediate and specific environmental health emergency response actions of the EHOs in emergencies.

3.0 MAIN CONTENT

THE ROLES OF EHOs IN EMERGENCIES

3.1 Prevention and Mitigation Activities

According to a certain publication (enHealth, 2010), environmental health sits at the intersection between environmental factors and health impacts. It is concerned with how both the natural and built environment can impact on public health. This responsibility becomes even more critical in the event of an emergency. Emergencies can take us to the threshold where the basic infrastructure we take for granted such as the infrastructure that delivers power, clean water, safe food and manages waste are at risk of collapse. In view of this, prevention and mitigation activities will enable us explore the EHO role in emergencies.

Prevention and mitigation activities refer to influencing codes, policies and practices so that the conditions that give rise to or influence the severity of public health incidents are reduced or eliminated altogether. For example and according to literature (enHealth, 2010), EHOs are working to bring the spread of dengue-carrying mosquitoes under control in Australia, identified opportunities to influence building codes to minimise design features that allow water to collect and provide ideal breeding grounds for mosquitoes. Specifically and according to literature (enHealth, 2010), this is the planning stage for and emergency, the EHO would be involved to:

- Establish or review arrangements to prevent or mitigate risks e.g. building codes and regulations; land use management; traffic controls.
- Participate in drafting and implementing legislation, codes and guidelines.

- Participate in establishing and implementing communication and warning systems facilitate community and business engagement in planning processes.

3.2 Preparedness Activities

Preparedness activities focus on planning and building community resilience. The community links that EHOs build to support their day to day work also position them to take an active role in supporting communities to engage in planning processes and improve their own level of preparedness and resilience to withstand emergency events. There are specific structures and mechanisms that support emergency planning but the general principles are familiar to any EHO who has been involved in planning for a major mass event. According to this recent account (enHealth, 2010), weeklong rave parties, scout jamborees, community festivals, bike rides involving thousands of cyclists or major sporting events are just some of the activities that EHOs work with. Their role is to identify public health risks, to anticipate what could go wrong and to work out ways to prevent or minimise the likelihood of a problem developing. These same skills of analysing hazards and managing risk are applied to emergency management planning activities. According to literature (enHealth, 2010), in this is stage the EHO would be involved to:

- Participate in emergency risk management planning processes and committees at all levels in the country.
- Collect local information on local risks, capacity, needs, and resources.
- Contribute to developing environmental health and emergency management operational plans and allocate responsibilities.
- Participate in arrangements to provide for that necessary staff, skills and resources are available.
- Establish and communicate roles and responsibilities.
- Participate in developing/reviewing policies and procedures.
- Participate in establishing protocols/MOUs with partner agencies.

3.3 Response Activities

The response phase puts plans into action. The focus of EHO work is on providing specialist advice on emergency management facilities and activities as they affect health outcomes. The heightened vulnerability of people under stress including emergency workers and the people directly affected, underlines the importance of this work. EHOs working alongside other emergency workers to raise awareness and find solutions that protect public health under difficult conditions are an indication of

their profile. In this wise, this is the stage of managing emergencies, the EHO would be involved to (enHealth, 2010):

- Act within scope of authorisation and under chain of command.
- Assess operational involvement and resource requirements.
- Follow protocols to access and allocate resources.
- Monitor, manage and report on implementation of emergency management plans and resource expenditure.
- Participate in officer debriefing/counselling and support.

Communication and public education:

- Provide advice, support and direction on public health risks to health and partner agencies, local authorities and communities to mitigate public health threats.
- Maintain regular communication with agencies and stakeholders.
- Assist with media content and response.
- Respond to information requests from emergency coordinators and other partner agencies.

Risk assessment and mitigation:

- Provide advice on facilities and activities conducted at staging areas; Incident control centres emergency relief and/or temporary accommodation centres
- Identify and report on public health risks
- Work with others to ensure public health risks are addressed
- Work with others to reinstate temporary infrastructure e.g. power, potable water, toilet and shower facilities, waste management
- Enforce public and environmental health standards appropriate to the circumstances
- Investigate and monitor illness outbreaks

3.4 Recovery Activities

The recovery phase involves dealing with the aftermath of emergency events – cleaning up and ensuring that essential services and infrastructure are available. Once the immediate crisis passes, the work transitions to a business as usual state where EHOs continue to provide advice and support to communities and businesses about what they need to do to promote and protect public health as follows (enHealth, 2010).

- Assess public and environmental health impact
- Undertake or direct remedial/clean-up activities

- Provide advice on programs and support to facilitate community recovery.

3.5 Immediate Environmental Health Emergency Response Actions Rapid Initial Qualitative Assessment

Following a disaster according to recent literature (APC, 2007), rapid and effective action is needed to save lives, protect health and stabilise the situation, to avoid making the emergency worse. Local, State and Federal environmental health staff should conduct a rapid initial qualitative assessment to collect information needed to begin an appropriate and timely response. The purpose of the assessment may include (APC, 2007) to:

- Decide whether local capacity is adequate or external assistance/resources are required
- Identify/recognise potential threats and hazards
- Assess health risks
- Determine priorities and recommend actions
- Develop objectives; determine priorities and intervention strategies.

First-hand information may be gathered in the field using the following techniques: on-site visual observations of the affected area; interviews with key individuals, community leaders, groups of disaster-affected people, or household members; expert measurements and testing and sampling activities (e.g., water quality testing). Environmental health officers/staff could participate in the assessment with specialists in related professions (e.g., engineering, emergency management, community health promotion) from other departments such as public works, environmental services, human services or other organisations.

All of the findings will be reported to the area's Public Health Leadership Team as soon as possible.

SELF-ASSESSMENT EXERCISE

i. Discuss the roles of EHOs in emergencies and disasters
ii. Describe prevention and mitigation activities of the EHOs in emergency and disasters
iii. Discuss preparedness, response and recovery activities of the EHOs in emergencies and disasters.

3.6 Specific Environmental Health Response Actions in EmergencyFood Safety

This section describes specific response actions that environmental health officers (EHOs) and Staff would be responsible for in the event of a natural disaster or man-made disaster. Prior training in this specific environmental health emergency response action is necessary according to literature (APC, 2007). Therefore, we are going to look at this area under the following subsections: emergency response objectives, priority activities and practical guidance information.

Food safety problems vary in nature, severity and extent, and depend on the situation during an emergency (APC, 2007). A breakdown in vital services, such as an interruption in water supply or electricity, can severely affect food safety. The main message to communicate is, "If in doubt, throw it out." In the absence of electricity, cold storage may be more difficult, if not impossible, and foods may be subject to microbial bacterial and fungal growth, and other forms of spoilage. Food can be damaged by smoke; chemicals used to extinguish a fire, or by other chemicals or radiation originating from an accidental or intentional release and disaster-affected people eating food from centralised kitchens that are not properly equipped or poorly run are extremely vulnerable to outbreaks of food borne illnesses (APC, 2007).

In a situation that poses a threat to food safety, the following objectives need to be addressed by the EHO immediately (APC, 2007):-

- Contact licensed food service facilities to assess the status of each one.
- Assure that mass feeding sites also comply with best practices for safe and hygienic food preparation and service.
- Ensure that licensed food service facilities can provide for hand washing, ware washing, safe water, and refrigeration (i.e., generators or dry ice).
- Provide information to the public and businesses regarding food safety topics such as: salvaging, sorting and proper disposal.
- Provide information/recommendations to help manage donations of food.

The priority activities that the EHO could do in response to an incident that poses a threat to food safety may include (APC, 2007):

- Provide technical assistance and consultation to owners/managers of food establishments regarding general food safety issues.
- Provide information to owners/managers of food establishments on salvaging and protecting perishable foods.

- Provide information to owners/managers of food establishments on sorting and proper disposal of foods, which may have been contaminated.
- Ensure that contaminated foods are properly collected and disposed of at sanitary landfills.
- Provide technical assistance at mass feeding centers, if established, to ensure safe food handling practices and personal hygiene for workers and attendees.
- Provide information to the public addressing protection of perishable foods, and advice on the sorting and disposal of food that may be contaminated.

The EHO must provide practical guidance information on food safety such that people are able to know what to do as follows (APC, 2007):

- If the power is out for less than two hours, then food kept in a refrigerator or freezer is safe to eat. While the power is out, keep the refrigerator and freezer doors closed as much as possible to keep the food cold as long as possible.
- Discard any of the following foods that are stored in refrigerators or freezers if they are kept over four hours at a temperature above 41°F, or if the temperature exceeds 45°F for any length of time: meat, poultry, fish, eggs, egg substitutes and leftovers; milk, cream and soft cheese; casseroles, stews or soups; lunch meats and hot dogs; cream based foods.
- Also, discard any other food that has an unusual odor, color, and texture or feels warm to the touch. The general public should be encouraged to obtain and keep an appliance thermometer in the refrigerator and freezer at all times to monitor actual temperatures following power losses.
- Frozen foods that have thawed completely and warmed to a temperature above 41°F should be cooked and eaten immediately while partially thawed frozen foods with ice crystals may be safely refrozen.
- Do not refreeze dinners that have thawed and discard any meat that has a questionable odor or has reached 41°F for two hours.
- Do not use a leaking, bulging, badly dented or rusty food container because it may indicate the possible presence of pathogenic bacteria that can produce deadly toxins.

Sanitation

Sewerage systems are a network of pipes that carry wastes away from a population to sewage treatment facilities and the sewer lines can become flooded or damaged in a disaster (APC, 2007). In such cases, waste-containing fecal matter may be released into the environment. Effective

sanitation is essential to provide a healthy and acceptable environment for people to live in after a disaster strikes. The first priority in preventing the spread of fecal contamination is to isolate and contain feces. The links between sanitation, water supply, and health are directly affected by hygiene behaviour. Human feces may contain a range of disease causing organisms including viruses, bacteria, and eggs or larvae of parasites. On the other hand, urine is relatively harmless. Microorganisms contained in human feces may enter a human body through contaminated food, water, eating and cooking utensils, and by contact with contaminated objects (PAHO, 2000).
In the event that inadequate sanitation poses a health threat to the general public, the following objectives need to be addressed immediately by the EHO (APC, 2007):

- Prevent human exposure to, and the spread of disease-causing microorganisms.
- Prevent contamination of water supplies.
- Prevent degradation of surface and groundwater quality.

These are the priority activities the environmental health officers of professionals could perform in response to an incident that poses threats related to inadequate sanitation services (APC, 2007):

- Coordinate provision of emergency waste disposal facilities for affected neighborhoods and local government facilities, and work with municipal staff.
- Secure commercial chemical toilets and hand washing stations, and arrange for servicing.
- Provide information on alternate human waste disposal methods if commercial toilets are not available.
- Supervise the construction of alternate, human waste disposal units such as a latrine.
- Provide educational information/recommendations to the public regarding personal hygiene.

The practical guidance information to the public on sanitation may include the following (APC, 2007):

- If water is available, it is best to use a solution of one part liquid chlorine bleach to ten parts water and do not use dry bleach, which is caustic and not safe for this type of use.
- Portable toilet chemicals, both liquid and dry, are available at recreational vehicle supply stores and these chemicals are intended to be used with toilets that are not connected to a sewer line.

- If the water is cut off, but the sewer lines are unaffected, toilets can be flushed with water manually added into the tank or bowl; such water does not need to be drinking water quality.
- Open defecation in or along rivers or streams should always be discouraged as well as open defecation along public highways.
- If open defecation is inevitable, people should be encouraged to establish and use only dedicated areas located distant and downhill, or downstream from human activities.

Vector Control

Disasters frequently create conditions that result in population increases in insects (e.g., mosquitoes and flies) and rodents or increased contact between humans and vector/nuisance species. In such situations, the chances of disease transmission increase sharply (DHS, 1999; PAHO, 2000, APC, 2007). For example, floods and heavy rains will create new mosquito breeding sites in disaster rubble and/or standing water. If sewage systems are disrupted and riverbanks are disturbed, rodents will leave these areas and head for other sources of food and harborage.
In view of the above, the vector control measures needed in a disaster situation by the EHO or environmental health professionals are dependent on the following six primary factors (APC, 2007):

- The type of disaster (e.g., a flood) influences the type and extent of environmental changes, which can cause increases in vector problems.
- The geographical extent of the disaster (i.e., is the disaster widespread or localised?).
- Climatic and geographical factors that may intensify or mitigate the effects of the disaster.
- The impact or loss of services such as garbage collection, sewage treatment and animal control.
- The extent of damaged or lost housing resulting in increased exposure to vectors.
- The existing vector species and prevalence of vector-borne diseases in the geographic area and at that time of year.

In the event that a disaster situation occurs in which vectors pose a threat to the public's health and wellbeing, the following response objectives need to be addressed by the EHO immediately (APC, 2007):

- Provide information to the public regarding mosquito and tick related topics such as: transmitted diseases, and insect repellent use and safety.

- Coordinate emergency corrective measures against vectors that cause public health problems.

These are the priority activities that environmental health officers or professionals could do to minimise health hazards and nuisance conditions posed by vectors (e.g., mosquitoes, flies, ticks and rodents) associated with a disaster situation (APC, 2007).

- Assess conditions in the disaster area (e.g., standing water, uncollected and exposed solid waste containing food waste and a damaged or flooded sewer system) that may promote vector populations.
- Work with private and public refuse haulers and municipal staffs to reinstate regular refuse collection or arrange for special pickups.
- Contact and work with the Metropolitan Mosquito Control Commission that will apply vector control measures to the affected area.
- Provide information to county residents addressing how to avoid mosquito and tick bites, and insect repellent safety and use.

The practical guidance information to the public on vector control may include the following (APC, 2007):

- Use of approved repellants such as DEET (N, N-diethyl-m-toluamide) or permethrin which is effective against mosquitoes, biting flies, chiggers, fleas and ticks can be applied directly on skin and clothing.
- Permethrin-containing repellents are recommended for use on clothing, shoes, and camping gear, but not directly on skin.
- Parents should choose the type and concentration of repellent to be used by taking into account the amount of time that a child would be spending outdoors, exposure to mosquitoes, and the risk of mosquito-transmitted diseases in the area.
- In addition to wearing proper insect repellent, workers should wear long sleeves and long pants while skin and clothing should be closely examined to be sure they have not carried ticks in from the field or brush environments. If a tick is noted, remove promptly.

Solid waste management

There are two basic categories of disaster impacts regarding solid waste management (APC, 2007). First, is the disruption of the solid waste storage, collection, and disposal system that affects the ability for ongoing generation of solid waste to be managed properly. This includes

solid waste generated by ongoing residential and business activities, and during disaster efforts can also include solid waste generated at mass feeding facilities, hospitals, mass care centers, etc.
Second, is the management of large quantities of debris, including separating materials requiring different types of management methods, and then ensuring proper management of each material type.

In view of the fact that disaster situations often result in large volumes of waste or building debris that can overburden the waste management infrastructure and present potential public health concerns such as insect and rodent harborage; diseases caused by environmental agents (e.g., mold); and chemical contamination, the following objectives need to be addressed by the EHO (APC, 2007):

- Determine the extent of disruption of solid waste management system.
- Provide information about potential public health concerns.
- Ensure proper storage, collection, and disposal of solid waste.
- Provide guidance, oversight, and liaison to businesses and the public.

The priority activities that the environmental health officer/professionals staff could do in response to an incident that disrupts the solid waste management system are (APC, 2007):

- Check with appropriate contacts (e.g., county environmental and or emergency management staff, operators at major solid waste facilities, large waste haulers or recyclers, municipalities that operate or contract for waste collection) to determine extent of solid waste management system disruption, including both disruptions to facilities and equipment, and to transportation routes.
- Serve as liaison, as needed, with other functioning facilities and collection services to try and ensure continuity of solid waste management services.
- Work with appropriate contacts to publicise the availability of emergency disposal and or transfer sites.
- Provide increased regulatory oversight as needed for licensed facilities and waste haulers, and determine if regulatory waivers are necessary.
- Provide information and guidance (via public service announcements, fact sheets or website updates) to businesses and the public regarding changes in the solid waste management system resulting from the disaster.
- Work with other governmental agencies (e.g., state solid waste regulatory agency, local government emergency management

staff, and municipalities), to determine different types of waste within the debris, including the extent of possible contamination of the solid waste (e.g., by hazardous materials, hazardous wastes, bio-hazardous waste, or radioactive waste).

The practical guidance information to the public on solid waste management may include the following (APC, 2007):

- Garbage should be stored in plastic garbage bags or wrapped in paper and stored in watertight containers which have tight fitting lids and containers should be kept as clean as possible with care being taken to remove any organic material from the container bottom when the container is emptied.
- Until normal garbage collection service is restored, never store garbage at home longer than three to seven days. Flies have a very short breeding cycle and can take over a garbage container in a very short time, especially during warm weather.
- Once the small kitchen garbage containers have been emptied for garbage storage and/or disposal, keep garbage as far away as possible from the food service, medical stations, and housing areas.
- Keep people from trying to salvage garbage consisting of foods which are discarded because the food was contaminated or spoiled.
- Use combustibles for fuel or burn daily, subject to fire department regulations;
- If possible, and water is not scarce, wash tin cans both top and bottom of the cans, then mash them flat. Wash glass containers also.

Medical/Infectious Waste

Medical/Infectious waste is an ongoing concern for hospitals, nursing homes, dental offices, physician offices, veterinarian offices, mortuaries, and any other place where medical assistance is provided. The disposal of medical wastes from these health care facilities may be disrupted in the event of a disaster, while the demand for medical services and the generation of medical waste are likely to increase (APC, 2007). Three basic categories of disaster impacts regarding health care providers and waste management facilities:

- Increased waste due to increased injury/illness.

Significant increase in waste from health care providers because of large-scale treatment of injured and/or sick and the need to manage that waste promptly.

- Damaged health care facilities.

Significant damage to major health care facilities and need to clean up and manage debris and other wastes from that provider.

- Damage to infectious waste facility (ies).

Significant damage to local infectious waste treatment/processing facilities and a consequent need to clean-up/manage debris and other wastes from that facility must be taken into cognizance.
In the event that a disaster situation occurs in which medical infectious waste poses a threat to the public's health, the following objective needs to be addressed by the EHO (APC, 2007):

- Verify that the facilities are operational and can continue to accept and treat waste on site.
- Determine the availability of medical waste transporters.
- Ensure continuity of medical waste management services.
- Ensure proper storage and management of medical wastes.
- Provide information about management of medical wastes.
- Inspect medical waste facilities.

The specific priority tasks that the environmental health officer/professionals could do in response to an incident that poses a threat to the public in this area are (APC, 2007):

- Determine which category (ies) of disaster impact applies to healthcare facilities in the jurisdiction (increased waste due to significant increase in injured/sick, damaged health care facilities, and/or damage to infectious waste facility (ies).
- Determine the condition of roads and highways system and evaluate its impact on medical waste collection and transportation.
- Increase regulatory oversight as needed for medical waste treatment/processing facilities located in the jurisdiction (because of the likelihood of increased use).
- Determine the availability of infectious waste haulers.
- Determine the status of infectious waste treatment/processing facilities serving the jurisdiction.
- Serve as liaison, as needed, with other functioning facilities and collection services to try to ensure continuity of infectious waste management if there is a significant disruption to facilities and collection services.

The practical guidance information to the public on solid waste management may include the following (APC, 2007):

- Infectious waste, also called biohazardous or red bag waste, cannot be placed in the normal trash for disposal at a landfill or industrial burner.
- Infectious waste must be segregated and put through a decontamination process before it is considered safe for routine handling as a solid waste.
- Costs can be minimised by ensuring only infectious wastes are added to the infectious waste collection containers.

Infectious wastes include all of the following that have not been decontaminated (APC, 2007):

- Laboratory waste – waste cultures and stocks of agents that are generated from a laboratory and are infectious to humans; discarded contaminated items used to inoculate, transfer, or otherwise manipulate cultures or stocks of agents that are infectious to humans; wastes from the production of biological agents that are infectious to humans and discarded live or attenuated vaccines that are infectious to humans.
- Blood – waste human blood and blood products in containers, or solid waste saturated and dripping human blood or blood products (including serum, plasma, and other blood components).
- Regulated body fluids – cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, and amniotic fluid that are in containers or that drip freely from body fluid soaked solid waste items.
- Sharps – discarded items that can induce sub-dermal inoculation of infectious agents, including needles, scalpel blades, pipettes, and other items derived from human or animal patient care, blood banks, laboratories, mortuaries, research facilities, and industrial operations; and discarded glass or rigid plastic vials containing infectious agents.
- Research animal waste – carcasses, body parts, and blood derived from animals knowingly and intentionally exposed to agents that are infectious to humans for the purpose of research, production of biologicals, or testing of pharmaceuticals.

4.0 CONCLUSION

We have said in the beginning that disasters are worldwide phenomena that have occurred throughout human history. However the dramatic increase in human population during the twentieth century has increased the impact of disasters on human population centres. The uncertainties

that exist in potentially hazardous situations can be minimised and public safety maximised through a range of strategies from hazard management and prevention to speedy restoration of the affected community. As Environmental Health Officers (EHOs) or Practitioners, we need to become aware of the likely hazards and potential disasters that may impact on our communities. A good state of preparedness before a disaster happens may reduce its impact. The effectiveness of counter disaster arrangements is achieved through the development of local, regional, and special disaster planning committees and approval of all counter disaster plans by the relevant Local, State or Federal Emergency Services or Counter Disaster Agencies. Furthermore, it is important that all emergency or counter disaster plans are continually updated to accommodate environmental hazards at realistically extreme levels**.** It is equally important that EHOs or Practitioners understand their role in such plans, particularly the lines of command which is essential so that the EHO would know who to feed practical requests through during emergency coordination rather than acting independently. We have concluded the unit and I believe that you clearly understand what information the unit is passing to you. In the next unit, we shall be discussing Forecasting in Emergency Situations.

5.0 SUMMARY

In this unit, dear students, you have learnt about the roles of EHOs in emergencies and disasters. The EHO would be involved to; establish or review arrangements to prevent or mitigate risks. Such risks as; building codes and regulations; land use management; traffic controls; participate in drafting and implementing legislation, codes and guidelines; participate in establishing and implementing communication and warning systems Facilitate community and business engagement in planning processes. Prevention and mitigation activities of the EHOs are such that in emergency and disasters; would be involved: establish or review arrangements to prevent or mitigate risks e.g. building codes and regulations; land use management; traffic controls; participate in drafting and implementing legislation, codes and guidelines; participate in establishing and implementing communication and warning systems Facilitate community and business engagement in planning process. The preparedness, response and recovery activities of the EHOs in emergencies and disasters would include; participation in emergency risk management planning processes and committees at all levels in the country; collect local information on local risks, capacity, needs, and resources, etc. Immediate and specific environmental health emergency response actions of the EHOs in emergencies would then include; food safety, sanitation, vector control, solid waste management, and medical /infectious waste.

6.0 TUTOR-MARKED ASSIGNMENT

i. Discuss the specific environmental health response actions of the EHOs in emergencies.
ii. Write note on medical/infectious waste.

7.0 REFERENCES/FURTHER READING

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MODULE 4 FORECASTING, PREPAREDNESS AND RESPONSE IN EMERGENCY SITUATIONS

UNIT 1 FORECASTING IN EMERGENCY SITUATIONS

CONTENTS

1.0 INTRODUCTION

Early warning and forecasting is crucial for efficient emergency response and contingency action planning. This is what makes the difference between life and death. By providing sufficient advance notice in a clear and informative manner a potential disaster can be mitigated considerably. Disaster management uses a variety of different tools, programmes, and methodologies to lessen the impact of a disaster and to provide the managers with means of guiding relief and reconstruction activities. In this unit, we shall be discussing forecasting in emergency situations.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- identify the tools and methods used in prevention and mitigation of emergencies
- enumerate the technologies of disaster management
- list additional technologies of disaster management.

3.0 MAIN CONTENT

3.1 Tools and Methods Used In Prevention and Mitigation

The primary focus of disaster management should be to prevent disasters and/or to mitigate those that do happen. Those in-charge of disaster such as disaster coordinator or disaster manager can generally use four sets of tools (University of Wisconsin, 1999). They are:

- Hazard management and vulnerability reduction
- Economic diversification
- Political intervention

- Public awareness.

The first two apply exclusively to disasters caused by natural phenomena, while the latter are used to try to mitigate impending refugee situations. As a general rule government, inter-governmental organisations, and the larger VOLAGS carry out hazard management programmes. This is because many of the hazard management activities involve vast areas and require large amounts of resources. At the community level, however, small agencies and communities can undertake a variety of activities with little outside assistance. Planting windbreaks and building flood embankments are examples of such activities.

The role of the disaster manager in hazard management is usually to insure that development plans and programmes incorporate hazard management activities. For example, a country's office of disaster preparedness may help make the various ministries aware of the flooding problem and may carry out studies in conjunction with other ministries. The actual management of a watershed to prevent or reduce flooding is usually the responsibility of river authorities, or of ministries of environment, agriculture, human settlements, and/or rural development. These activities are often carried out with the help of the central planning office such as the National Emergency Management Agency (NEMA) for Nigeria and/or State Emergency Management Agency (SEMA), and urban planning departments.
The range of specific tools for mitigating environmental hazards is (University of Wisconsin, 1999):

- PlanningBuilding regulations, including zoning, building codes, performance standards, and improved urban design
- Strategic development or investment of sites and services
- Economic incentives
- Housing education, i.e., the training of home builders to improve the quality and performance of housing
- Code encouragement, i.e., the use of building inspectors to advise and encourage homeowners to utilise disaster-resistant construction techniques (rather than simply to enforce codes)
- Financial incentives as an inducement to builders to use hazard-resistant construction techniques
- Insurance
- Environmental management, for example, reforestation and rangeland management in watersheds
- Immunisation campaigns to reduce the threat of disease.

All the tools listed above require a technical understanding of the threats and the possible solutions. The selection of a particular set of

approaches must be determined by the financial capacity of a government or PVO as well as by their administrative capacity. For example, the adoption of building codes would depend upon the capacity of the government to enforce compliance. In a case where rapid urbanisation and small metropolitan budgets would not permit enforcement, housing education or code encouragement could be chosen as an alternative. Several of these tools deserve more discussion in the context of disaster mitigation in the Third World.

Planning Strategies

Various strategies that can mitigate the impacts of hazards can be adopted through normal planning. Among these are (University of Wisconsin, 1999):

- Adjusting normal development programmes to reduce losses. For example, certain varieties of crops that are more wind- or flood resistant can often be introduced in areas prone to floods or cyclones.
- Economic diversification. In regions where the principal or sole source of income is threatened, planners should attempt to diversify the economy and introduce economic activities that are less vulnerable, or not as vulnerable to the same types of disaster. Diversification is extremely important where economies are based on a single cash crop. Small island countries that depend on exporting bananas, palm oil, or other tropical agricultural products are vulnerable to extensive damage in a cyclone. Such countries could diversify into fishing, light manufacturing, or other activities, for example. Diversification will help protect the economy against natural disasters and also against unanticipated price fluctuations on the international market.
- Developing "disaster resistant" economic activities within a region. Some economic activities are relatively unaffected by certain types of disasters. For example, warehousing is more suitable than manufacturing for locating in flood plains. Coconut palms are more suitable than citrus or other fruit trees in cyclone-prone coastal areas. Efforts should be made to identify and to encourage the development of enterprises that are less vulnerable to the hazards.

Regulations

Planners can use three sets of regulatory controls for hazard management. These are land-use planning and zoning; building codes and performance standards; and land-use and building standards. Conventional land-use controls regulate function, density, and location

of activities, the rate of development, and limits of growth. "Zoning" may be defined as a division of land into districts or land-use zones; the prescription of regulations within these zones depends on how the zones are to be developed. Zoning ordinances are usually divided into broad land-use categories, such as agricultural, residential, industrial, and/or commercial uses. Sub-zones may include such designations as reforestation areas, range-land management zones, and watershed management zones.

Zoning has a broad function in the reduction of vulnerability, since vulnerable areas can be controlled or set aside for certain types of development. For example, a hazardous area can be zoned permanently for agricultural or recreational use, thus minimising concentrations of a population or a built environment on this site. Land-use controls and regulations can be an effective tool for reducing vulnerability, but they are not a universal cure. Controls must be relevant to local conditions and must be formulated with a realistic assessment of the actual risk. Building codes are used to control the built environment within an area. Economic concerns often dictate that hazardous areas be developed. To offset the threat and mitigate potential damages, building codes can be formulated to guide construction so that buildings and other man-made structures are as safe as possible.

Building codes and land-use zoning are often criticised as being ineffective in less developed countries, since enforcement is difficult and most growth is unregulated. Furthermore, codes and zoning are considered "passive" regulatory instruments; their enforcement often creates an adversary system between the public and the government. If development occurs in an area where it is not permitted, governments are usually powerless to reverse the situation. Enforcement activities may give rise to corrupt inspection officials who institute a system of bribery to overlook nonconforming uses or structures. Because of these criticisms, planners have recently proposed an alternative that appears more workable in many of the developing countries.
This is known as performance standard zoning and building regulation. In this approach, flexible standards are developed and adopted. They permit a variety of uses and construction as long as certain basic, minimal standards of safety and health are met. The standards usually permit people to use a variety of approaches to attain the desired standard. Rather than strictly enforcing the standard, the government makes a commitment to provide technical and planning assistance to persons in order to enable them to reach the highest standard possible. This type of approach is called an "active" approach. While it may be more expensive, a higher degree of compliance can usually be attained. Furthermore, governments become advocates and advisors rather than adversaries.

Strategic Development or Investment

Planners are often able to encourage development away from hazardous areas by investing or creating a favourable environment for investment in less vulnerable regions or communities. This strategy is often difficult to implement in regional development. Most hazards are not site-or area-specific; they can threaten wide areas. For example, earthquake zones often extend for thousands of miles, and relocation of threatened settlements or enterprises is often not possible. Furthermore, hazards that occur infrequently are usually not considered in economic development planning. Strategic investment has proven successful in agricultural sectors. For example, regional planning authorities in India have been successful in extending irrigation, land reclamation activities, and regional farm-to-market roads onto coastal plains that might otherwise have been developed with more intensive forms of economic activities. By developing the coastal plains with large, plantation agriculture relying on fewer laborers, the authorities have substantially mitigated human losses from hurricanes.

Economic Incentives

Governments are often able to extend a number of economic incentives to people and organisations in order to encourage development away from hazardous areas. Examples of incentives include provision of land, loans, grants, favourable credit, favourable taxation, technical assistance, or a combination of these. In an effort to reduce human and agricultural losses, the government of Bangladesh recently initiated a programme to provide small plots of irrigated land to landless peasants; these persons normally worked as sharecroppers on hazardous floodplains in the lower Brahmaputra delta and on low-lying, offshore islands threatened by hurricanes and storm surges. Low-cost loans for initial land development were made available through cooperating private sector institutions, and relocation grants were provided by the government. Once people had arrived in the new areas, technical assistance for farming was provided by government agricultural extensionists.

Public Information and Education for Hazard Management

Effective hazard management requires an informed public, especially those at risk. In hazard management this is called public awareness. Public awareness campaigns disseminate information about the types of hazard, the effects of a hazard, the measures available to reduce the impact, and the actions to take when the hazard strikes. Typical public awareness activities include (University of Wisconsin, 1999):

- Film and video programmes that illustrate and describe the hazard and the risk and demonstrate what can be done to prevent or mitigate losses
- Radio programmes
- School curricula and booklets that include lessons and projects about hazard mitigation
- Comic books (perhaps based on the films or video programmes) made available for general distribution
- Posters placed around the community to act as a general reminder of the issues
- Presentations on the subject made to public groups or private organisations (e.g., neighbourhood councils)
- Brochures and handouts distributed door-to-door or at public event, fairs, etc.
- Features or articles in local media, especially periodicals.

It is crucial to promote disaster awareness in areas where risk and vulnerability are high and people are indifferent to potential hazards. Public awareness activities can help motivate the public to initiate precautionary measures. Such activities can influence decision making at all levels. However, public awareness will not be successful unless it is continuous and highly visible. A public awareness programme for disaster mitigation describes or demonstrates techniques that can be taken to keep a disaster from happening. These can include cultivating drought resistant food crops, making structural improvements to buildings to withstand the forces of earthquakes or high winds, and sitting buildings or agricultural land out of floodplains.

Public awareness is also an important disaster preparedness tool. Preparedness awareness activities are designed to inform the public about what individuals can and should do to protect themselves and their property. Disaster preparedness activities naturally vary with each type of disaster. In the case of high winds, people would be encouraged to board up windows, batten down loose objects, etc. In the case of flooding, evacuation routes would be identified for the public. If a communicable disease epidemic threatens, information about its mode of transmission and means of control would be important. Timing for a public awareness programme in disaster preparedness depends on the type of disaster. For predictable and seasonal hazards such as flooding and high winds, a programme of public awareness should be initiated immediately before and during the season. For slow-onset disasters (e.g., drought), implementation should begin as soon as there are indicators of its development. For non-predictable events such as earthquakes, issues of preparedness need to be brought continuously to the public's consciousness.

Economic Mitigation

The purpose of economic mitigation is to reduce the disaster's impact on the economy and on the economic well-being of the disaster victims. This is done by strengthening those sectors of the economy that are particularly vulnerable to disasters, by diversifying the economy, by introducing or expanding "disaster-resistant" economic activities, and by spreading or relocating economic activities to less vulnerable areas so that not all the principal enterprises would be affected at the same time. Insurance or other economic risk-spreading activities are also possible.

Economic mitigation uses the same general methodology employed to reduce physical losses. Once hazard mapping has been completed, planners identify those sectors of the economy that are vulnerable to disasters. This is done by relating risk to economic activities or means of production. First, the key elements of the economy and those that are not particularly vulnerable to disaster are identified. Often this is not difficult, especially for countries that have one-crop economies or only a few industries that earn foreign currency. Every economic activity is examined to determine if a hazard could affect a significant portion of that activity.

This analysis is conducted on both the macro and micro levels. In other words, even though a flood may not have a significant economic impact on a country as a whole, it may have a major impact on a community or region. Economic vulnerability determinations should consider other critical activities and installations. Energy facilities and systems are of prime concern, as are transportation networks, fuel distribution facilities, road systems, and financial institutions. Even though the means of production may not be affected by a disaster, the disruption of transportation networks can make difficult the marketing or distribution of goods. Economic diversification and insurance are the two primary economic mitigation measures.
Diversification spreads the risk so that if a disaster occurs, the total losses in any one area or sector are acceptable. For many countries diversification can be a difficult choice. Small nations that are dependent upon one or two crops for their livelihood may find it politically and economically difficult to justify diversification simply on grounds of disaster mitigation. In this case, long-term development choices come into play. The decision may ultimately rest more on political or economic factors than on disaster mitigation strategies. Insurance can play a major role in mitigating disaster losses. Unfortunately, there are too few programmes currently available for low-income persons in the developing countries, although new programmes and alternative insurance schemes are being developed.

In some cases governments and large economic institutions have found alternative ways of providing insurance to low-income people. For example, cooperatives can often be insured even though individual farmers who are members of the cooperative cannot. If a disaster occurs, the insurance pays the cooperative, which in turn divides the proceeds of the insurance among its members. The indirect effect of insurance is also important to consider. Disaster claims paid for large institutions, facilities, installations, or structures can infuse much needed cash into the local economy. This can have a spin-off effect reflected in increased jobs, increased purchases and orders for local suppliers, and other economic boosts to the area affected by a disaster. Thus, even if it is not possible to insure low-income families and their houses, farms or business, the objective of disaster management should be to insure the maximum number of larger economic activities.

Adjusting On-Going Development Activities

Adjustment to on-going development programmes is a major way to address disaster mitigation. Many development projects have the potential to reduce either physical or economic vulnerability of families and communities. For example, housing programmes can incorporate, often at little or no additional cost, a variety of disaster-resistant construction and planning techniques; unfortunately these measures are frequently overlooked because the development programme planners are not aware of disaster mitigation opportunities. Thus, an important function of disaster management is to review and adjust normal development programmes so that they help mitigate or prevent future disasters. Areas of particular interest are (University of Wisconsin, 1999):

- Housing and urban development programmes (siting and construction)
- Establishment of new settlements
- Forestry projects
- Agricultural development projects land reclamation
- Rangeland management

Diversification and Expansion of the Social Support Network

The level of disorganisation that results from a disaster is an inverse function of the level of social organisation of the community. Societies with an overlapping complex of social organisations, both formal and informal, can more easily absorb a disaster and more quickly respond. In Third World poor communities, the network of social organisations is usually minimal; as a consequence, a disaster can have a far greater

impact on the poor community. Diversification of a community's social structure is an important mitigation measure. For the most part this can best be accomplished through extending normal development work in one of three ways.

The first is institution building. Local organisations that serve as a means of coping with disasters or providing support to disaster victims should be identified and strengthened. A conscious effort to increase the organisations, capacities and skills can enhance their abilities to deal with crises. The second activity is to increase the number of coping mechanisms within the community. By developing formal institutions and linking these groups to outside resources, communities can establish vehicles for intervention and assistance. The third activity is to broaden the scope of service of local groups and to encourage activities that promote cooperation among different elements or groups within the society. Such cooperation can reduce the social impact of a disaster. By increasing self-sufficiency and reliance on internal resources, agencies improve the ability of local people to cope with a disaster. This can be a mitigating factor and can help to speed recovery.

3.2 Technologies of Disaster Management

Disaster managers should be familiar with certain technologies or sets of information used in disaster management. Among the more important are mapping, interpretation of aerial photography, communications, information management, logistics and computer applications, epidemiology and preventive medicine.

Mapping

Disaster management relies heavily on the use of maps and mapping techniques for control of disasters and for managing response (University of Wisconsin, 1999). At a minimum, disaster managers must be familiar with a variety of different types of maps including topographic maps, land-use maps, hazard maps, geologic maps, vegetation maps, population distribution maps, seismic maps, and hurricane tracking maps. Disaster managers must know how to read maps. They must also know how to plot information accurately on the maps and how to interpret trends through map reading. The introduction of microcomputers to disaster management will increase the use of computer-generated maps. Schematic maps generated through computer graphics are being used to provide updated information about disaster situations as they develop. For example, these maps can be used to monitor flooding and guide a disaster manager who must decide when to evacuate certain areas. By monitoring the stream flow and water level at an upstream location, a disaster manager can map the expected flood

zone and predict threatened areas, the extent of the flooding, and areas that should be evacuated on a priority basis (WHO, 2002). The manager can likewise determine where to focus flood control activities. Computer-generated maps are used in risk analysis, vulnerability analysis, evacuation planning, flood monitoring, damage assessment, and reconstruction planning.

Aerial Photography and Remote Sensing

Aerial photographyused wisely is a valuable tool for disaster managers. It can be an expensive tool if misused. Disaster managers must know how to interpret aerial photography and how to apply it to both pre-disaster planning and post-disaster response activities. Possible uses of aerial photography include hazard analysis and mapping, vulnerability analysis and mapping, disaster assessment, reconstruction planning and management.

Remote sensing is the acquisition of information about a subject that is at a distance from theinformation-gathering device. Weather radar, weather satellite, seismographs, sono buoys, and videotape are examples of remote sensing systems. Aerial photography is a form of remote sensing, but in disaster management the term generally refers to the use of satellites with imaging systems that produce a computer-generated image resembling a photograph and with other electronic monitoring devices. For example, meteorological satellites track hurricanes by remote sensing. The "picture" of the hurricane is a computer- generated image made by the satellite's sensors. The use of remote sensing in disaster management is increasing. Pre-disaster uses include risk analysis and mapping; disaster warning, especially cyclone tracking, drought monitoring, volcanoes, large-scale fires and agricultural production; and disaster assessment, especially flood monitoring and assessment, estimation of crop and forestry damages, and monitoring of land-use changes in the aftermath of a disaster. Meteorological satellites monitor weather patterns, detect and track storm systems, and monitor frosts and floods.

Communications

Electronic communications are an important technology of disaster management. Electronic communications are used for coordination and control, assessment, reporting, monitoring and scheduling logistics, and reunification and tracing separated families. A disaster manager must be familiar with communications equipment and their limitations. He or she must understand the effective use of communications networks both prior to and in the aftermath of a disaster. A disaster manager must above all know how to communicate, what to communicate, and with

whom to communicate, using the different technologies available. Electronic communications too often give disaster managers the impression that they can control a situation simply by communicating. The information that comes in through electronic communications can often overwhelm and/or misinform a manager. Thus the manager must be knowledgeable about the systems, but he or she must also know how to structure the communications systems. Structuring will allow rapid communication of vital information and accurate assessment of a developing situation.

Information Management

Disaster management is highly dependent on accurate information collection and interpretation. Disaster managers must therefore be familiar with how to collect, structure, and evaluate information in emergency situations. This is usually done by establishing an information management system. In recent years microcomputers have provided disaster managers with a new tool for structuring information and data and analysing information patterns and trends. Microcomputers are now routinely used for programme planning, project scheduling and monitoring, management of logistics, damage assessment, casualty management, communications, and cost accounting management.

Logistics

Every disaster manager eventually becomes involved in logistics. Therefore, he or she must be familiar with basic logistics planning, inventory management, warehousing and stock control procedures, materials distribution methods, and accounting procedures. Logistics planning can include, for example, evaluating the capability and capacity to move supplies through the relief system identifying bottlenecks and developing alternate solutions. Logistics planning in a country struck by a disaster might include the estimation of the capacity to receive supplies at air and sea ports and to unload the supplies and reload into trucks. It might include determining the sufficiency of trucks of the right size and type, and the availability of parts and fuel for the trucks. Other considerations might be adequate roads to the site of relief, adequate warehouses at collection points, and a distribution system with the administrative capability and the methods to deliver the goods to the final point of utilisation.

Epidemiology

Epidemiology is the branch of medicine that investigates the causes and control of epidemics.

In relation to disasters epidemiology has come to mean the evaluation of all the causes of the occurrence or nonoccurrence of a disease (and more broadly of the death and injuries) resulting from a disaster. Epidemiologic surveillance after disasters and refugee crises includes identification of diseases to include in the surveillance; the collection, interpretation and utilisation of data; laboratory diagnosis of samples; development of policies and plans for a public health programme; and establishment of a programme for the control of communicable disease. The last two points coincide with programmes in environmental health management and preventive medicine.

3.3 Additional Technologies of Disaster Management

Many disaster managers become involved with disasters through their specialised job skills or through their work in a specific sector of the government or economy. For example, an engineer in a department of public works may need to know the technologies of road repair after flooding or landslides and of bridge repair after an earthquake. The following are other examples of skills or technologies for which special training may enhance the individual's disaster management capabilities.

Agriculture, production, and food systems and technologiesthat relate to disasters identify disaster-resistant crops, methods of restoring crops damaged by disaster, restoration practices for soils damaged by a disaster, and alternative crops to replace quickly the losses from disasters. The last action will minimise dependence on outside food and economic aid.

Disaster assessmentis the technique of evaluating the damage and the needs created by a disaster. Useful disaster management assessment identifies procedures for data collection and information dissemination; it also identifies priorities for relief assistance.

Refugee camp planning is essentially the discipline of town planning but with the added requirements of developing a human community environment under the crisis of emergency conditions. Such planning must take into account a volatile political reality and an uncertain future for the camp's residents. Additional aspects of refugee camp planning include the technologies of sanitation, security, circulation and transportation, water and food supply.

Meteorologyis of use to disaster managers involved with warning, communication, search and rescue in areas subject to high winds, flooding, and even drought.

4.0 CONCLUSION

The disaster management and risk reduction strategy and coordination plan does not only provide the framework for the specific sector plans, but also focuses on the delivery of initiatives of a global nature and scope. These initiatives intend to address identified gaps in the way we manage information and knowledge across sectors, as well as supporting funding for community resilience interventions and other data management interventions. With the establishment of decentralised data management functions at regional level (Zone offices), it is essential to provide adequate technical support, information management and coordination capacity globally in support of regional and country level staff as well as National Societies by using innovative methods and approaches that can respond to developing external trends and better enable the zones to respond to the needs of National Societies.

I am delighted that you finished reading this unit. In the next unit we shall be discussing preparedness and response in emergency situations. Best of luck as you read the next unit.

5.0 SUMMARY

We have in this unit discussed about tools and methods used in prevention and mitigation and you identify now that the primary focus of disaster management should be to prevent disasters and/or to mitigate those that do happen. You have learnt that those in charge of managing disaster can use four sets of tools namely; hazard management and vulnerability reduction, economic diversification, political intervention, and public awareness are used to try to mitigate impending refugee situations.

Disaster managers should be familiar with certain technologies or sets of information used in disaster management. Among the more important are mapping, interpretation of aerial photography, communications, information management, logistics and computer applications, epidemiology and preventive medicine. Other additional technologies of disaster management in which many disaster managers must become involved with disasters through their specialised job skills or through their work in a specific sector of the government or economy are Agriculture, production, and food systems and technologies, Disaster assessment, Refugee camp planning, and Meteorology.

6.0 TUTOR-MARKED ASSIGNMENT

i. Discuss the tools and methods used in prevention and mitigation.
ii. List the technologies of disaster management.

7.0 REFERENCES/FURTHER READING

University of Wisconsin (1991). Aim and scope of disaster management: Study guide, disaster management centre, Madison, Wisconsin, USA.

World Health Organisation (2002).Environmental health in emergencies and disasters: A practical guide. World Health Organisation, Geneva.

UNIT 2 PREPAREDNESS AND RESPONSE IN EMERGENCY SITUATIONS

CONTENTS

1.0 INTRODUCTION

Preparedness and response in emergency situation is the phase of the disaster-management cycle that often attracts the most attention and resources. During this phase, services including environmental health services may have a great impact on the health and well-being of affected communities. The way the emergency response has been planned and the way the emergency is managed will have a significant influence on post-disaster recovery and future development possibilities. The emergency response phase should therefore be seen as a critical part of the disaster management cycle. In this unit, we will be discussing issues relating to preparedness and response in emergency situations.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- describe assessment of the situation, evacuation, environmental health measures, and organisation of environmental health activities
- identify personnel management, equipment and supplies, transportation and logistics, and telecommunication
- expantiate financial procedures; rules, standards and guidelines in disaster response, and international assistance.

3.0 MAIN CONTENT

Following a disaster, rapid and effective action is needed to save lives, protect health and stabilise the situation, to avoid making the emergency worse. Accordingly the following need to systematically done (WHO, 2002): assessment of the situation, evacuation of persons, environmental health measures need to be taken, environmental health activities need to be well organised, issues concerning personnel should be well organised including equipment and supplies, transportation and logistics, telecommunication. Also financial procedures must be addressed properly; rules, standards and guidelines in disaster response must be well set as well as issues relating to international assistance.

3.1 Assessments of the Situation, Evacuation, Environmental Health Measures, and Organisation of Environmental Health Activities

An assessment of the situation, however brief, is needed to ensure that any action undertaken is effective. Primarily two types of assessment (WHO, 2002): rapid initial assessments to establish the nature and scale of the emergency and the likely need for external assistance; and detailed sector assessments to plan, is required to implement and coordinate a response. Other types of assessment are required at various stages of the response, such as continual assessment (i.e. monitoring or surveillance) and assessments for post emergency rehabilitation. In acute emergencies, initial assessments should be rapid and produce the information required to start an appropriate response. In less acute emergencies, or once an acute situation has stabilised somewhat, a more detailed assessment is needed to design longer-term measures with adequate provision for monitoring and management. More thorough assessments are needed for recovery and resettlement programmes. Whatever form the assessment takes, it is essential that information is collected and rapidly transmitted in a way that makes it clear what actions should be taken and why (WHO, 2002).

It is important to use standardised processes and standard report formats for assessments, to ensure objectivity and to enable the humanitarian response to be made in proportion to the needs identified (WHO, 2002). Assessment questions should be considered before field work, and information recorded in a way that can be understood by decision-makers who may not visit the disaster area. When several teams assess different geographic areas their findings can be compared and resources directed to where they are most needed. Training on assessment techniques is an important element of emergency preparedness for environmental health services. Checklists can be a useful way to ensure that assessments are thorough and that no important issues are missed.

Checklists may be found in a number of publications, including: International Federation of Red Cross and Red Crescent Societies; Sphere Project; United Nations High Commissioner for Refugees; and United States Agency for International Development (WHO, 2002). Checklists should be used with common sense and good judgement to ensure that each emergency is assessed according to its specific characteristics.

Assessments often begin with a brief review of information about the area and the population affected the type of disaster and the environmental health infrastructure that may have been affected. In some cases, it may be possible to start organising an initial response on the basis of this second-hand information. Field-based assessments allow preliminary information to be confirmed and the details necessary for organising specific relief to be gathered. The process may start with an aerial view of the disaster area, or an overview from a high point on a hill or tall building. For assessment staff from outside the affected area, discussions with local colleagues may provide a similar overall picture of the situation, which allows field assessment work to concentrate on areas of most pressing need. Information available might include health data; approximate figures on the number of people affected, displaced, killed and injured; the number of houses and other buildings destroyed; and the major impact of the disaster on water supplies and sanitation.

It is most important to work with local partners and government agencies to ensure that assessments seek to find information that is not already available and that information gathered is shared with interested parties. Assessments should be coordinated, and new staff arriving in a disaster-affected area should contact whatever body has been established to coordinate the emergency response before carrying out field assessments (WHO, 2002).

First-hand information may be gathered in the field using a variety of techniques, including the following (WHO, 2002):

- On-site visual assessment, with both structured and non-structured observation techniques (e.g. a health observation walk)
- Expert measurement and testing (e.g. water quality testing, or diagnosis of mechanical failure of a pump)
- Surveys, to provide statistically valid information from a sample of the population
- Interviews with key informants, community leaders, groups of disaster-affected people, focus groups or household members
- Participatory techniques, such as ranking or diagramming, to gain a rapid understanding of the way the disaster has affected

different parts of the population and what peoples' own assessment of the situation and options for response might be.

Whichever assessment techniques are used, they should be adapted to the urgency of the situation and the degree of detail and accuracy needed to mount an appropriate response. There is growing acceptance that disaster survivors themselves should be partners in the relief process. Relief is far better done *with* people, rather than for them (WHO, 2002). For the most part, a disaster-affected population will take action itself. Professional health staffs need to take into account existing coping mechanisms used by groups of survivors and be willing to reinforce any spontaneous activity that appears to be appropriate. It is vital also to explore the survivors' own perceptions of their needs, which may differ from the views of those providing help. Effective intervention is almost always characterised by consultation and by efforts to empower those for whom help is intended (WHO, 2002).

A field assessment, particularly following a large-scale disaster, requires organisation, resources and management in the same way as any other professional activity. Where teams of people are required, they need to be mobilised, briefed and often trained before starting the assessment. Environmental health staff may often carry out assessments in teams with specialists in related professions, such as engineering, health and social welfare, from other government departments or organisations. In such cases, close coordination is needed between different institutions and a clear management and reporting structure should be established (WHO, 2002).

Assessment teams need to be given clear terms of reference and be aware of the type of information and recommendations that are expected from their work. Staff carrying out assessments may also carry out initial relief activities simultaneously. For instance, a team visiting an isolated water treatment works may carry with them spare parts, fuel or treatment chemicals (WHO, 2002). However, a sensible balance must be found between the need to act quickly and the need to gather sufficient information to ensure that action is effective and appropriate. It is usually more effective to concentrate on assessment activities that enable an appropriate and substantial response to be launched than to spend time on initial relief activities, even when this sometimes means not responding to obvious needs during assessment work (WHO, 2002).

Evacuation can be an important component of prevention, preparedness and response. It involves the temporary transfer of a population (and to a limited extent, property) from areas at risk of disaster to a safer location (WHO, 2002). Environmental health staffs are involved in ensuring that evacuations do not create health hazards.

The following points should be borne in mind when designing and implementing disaster warnings and instructions for public evacuations or other emergency measures (adapted from Walker, 1989):

- Language used should be simple and non-technical.
- If different warning systems are used, they should not give conflicting messages, or people will tend to ignore them.
- Messages should state clearly the exact nature of the impending threat and its implications for the target population.
- The potential victims of a disaster should be clearly identified.

Even if the warning creates awareness of an impending disaster, people may fail to react, and it is likely that environmental health workers will be part of a broad effort to persuade the population that the warning must be taken seriously. Radio broadcasting is likely to be restored relatively quickly and should be used to the fullest extent. Reliable information will enable the survivors to understand the situation, how the problems are being addressed, and what steps they should take to ensure their safety and the success of the relief operation (WHO, 2002).

The forms of evacuation that can be carried out during preparedness and response are as follows (WHO, 2002):

- Organised, pre-impact evacuation is commonly carried out on a massive scale in some countries in response to warnings of tropical storms (e.g. in India and the USA).
- Organised post-impact evacuation may also occur in response to industrial accidents and after earthquakes (e.g. in the severe winter conditions following the Armenian earthquake of December 1988). Officially supported and comprehensively organised population relocation has also occurred extensively after volcanic eruptions.
- Spontaneous pre-impact evacuation commonly occurs in response to a perceived threat, such as tropical storms, volcanic eruptions, droughts, floods and chemical or nuclear accidents. Military operations can also set off massive migrations. Communities facing severe food shortages may move *en masse* in search of food or income to avoid starvation.
- Post-impact spontaneous evacuation occurs in response to the loss of shelter or essential services in an area. In tropical storms and flooding, there is a tendency to move to the periphery of an affected area, especially where some existing services remain or to higher ground or raised roads, such as happened in Bangladesh and Mozambique.

On evacuation routes, the following environmental health services must be taken into consideration (WHO, 2002):

- Travel time in evacuations should be kept as short as possible, but where longer journeys are necessary, the support of environmental health personnel is required. People travelling long distances on foot require considerable support to reduce risks to their health.
- Clean drinking-water should be provided, preferably at periodic rest stations along the way, at the rate of three litres per person per day in temperate climates, rising to at least six litres per day in hot desert areas. Safe water should also be provided for personal hygiene. Ideally, water should be disinfected with chlorine or another appropriate chemical. If possible, evacuees should be shown how to choose safe water sources. Non-perishable food should also be provided.
- At rest stops, excreta and solid wastes should be buried in holes or trenches. These should be at least 60 centimetres deep and, when the contents reach 30 cm from the ground level, should be backfilled with excavated earth and trampled down. Where the evacuation is likely to take several days, the use of temporary toilets should be considered.
- Where appropriate, existing facilities such as hotels, schools and offices may be temporarily taken over as evacuation rest stops, and their water supplies and toilets used.
- When evacuation is on foot, as is often the case, rest-stops should be provided every two hours' walk, if possible, and evacuees should be given information about road conditions and access to water, food, shelter and medical assistance on the next section of the route.
- Special precautions may be needed to protect people living along evacuation routes from possible health risks due to the passage of the evacuees, particularly from defecation on the roadside, which may require clean-up activities.

Large-scale population movements into an area are of primary concern for environmental health (WHO, 2002). Such movements involve settlement in marginal conditions, usually away from services. In particular, people are often moved into areas where there are no piped water supplies. Relocation can result in high population densities, associated with wholly inadequate water supplies and sanitation leading to environmental health problems. There is almost always an increased risk of faecal–oral transmission of diseases related to poor hygiene. Other risks include contact with pathogens not found in the home area (e.g. the malaria parasite), including those transmitted by vectors unfamiliar to the evacuated population. Generally, the evacuated

population will be more susceptible to these diseases than the local population, as occurs in areas endemic for malaria. The relocation of a population into high-density emergency settlement will usually greatly increase the risk of outbreaks of common childhood diseases (WHO, 2002). Measles is a particular risk when the population has low immunisation coverage. Health conditions and nutritional status before displacement are also important. Evacuation can also place people in the vicinity of unfamiliar environmental hazards e.g. dispersal into damaged industrial areas where a range of toxic substances are stored (WHO, 2002).

Whether the evacuation is officially organised or spontaneous, there will be a need to strengthen the environmental health services in the area of influx. Priority may need to be given to locations with (WHO, 2002):

- Very large, dense, underserved settlements
- Settlements with poor public-health indicators and/or with a risk of epidemics
- Settlements without adequate supplies
- Large numbers of people sheltering in large buildings, such as schools, office blocks and warehouses
- Poorly functioning hospitals, clinics and feeding centres;
- Substantial numbers of people with special needs, unaccompanied children, the elderly and disabled
- Understaffed and poorly equipped laboratory services.

More so, good relations with both the host community and the evacuees are essential in gaining cooperation. In addition, lay people with useful skills among both the evacuees and the host population should be encouraged to volunteer their services (WHO, 2002).

Overall public health priorities in the emergency phase include ensuring access to food, shelter, health care, water supplies and sanitation facilities, control of communicable disease, and public health surveillance. Specific environmental health measures in the emergency phase aim to reduce loss of life and protect health by changing the adverse conditions of the physical environment affecting or endangering health. These measures can include the provision of shelter, water supplies, sanitation, vector control and the burial of the dead, as well as measures to protect food, control epidemics and communicable disease, and to limit chemical and radiation hazards. Priorities in the acute emergency phase include (WHO, 2002):

- Providing facilities for people to excrete safely and hygienically
- Protecting water supplies from contamination

- Providing a minimum amount of water for drinking, cooking and personal and domestic hygiene
- Ensuring that people have enough water containers to collect and store water cleanly
- Ensuring that people have sufficient cooking utensils, equipment and fuel to cook and store food safely
- Ensuring that people have the knowledge and understanding they need to avoid disease
- Ensuring that people have soap for hand washing
- Containing or removing sources of chemical or radiological contamination, or evacuating people, to ensure they are no longer exposed to these hazards.

On priorities for emergency response, it is not possible to define a universally applicable order of priorities for emergency environmental health measures, as each situation demands a specific response (WHO, 2002). The priorities following a population displacement in southern Africa, where a cholera epidemic is imminent, are likely to be different from the priorities following a tornado in the United States. To make rational decisions about priorities, and to revise those priorities as the situation changes, means that an adequate assessment must be combined with basic environmental health and epidemiological principles. In practice, several priorities usually need addressing simultaneously, as they are closely related, both epidemiologically and operationally. For instance, containing and disposing of human excreta is an important aspect of protecting water supplies from contamination; providing water collection and storage vessels and increasing water production are both needed to ensure the adequate collection and consumption of water for personal hygiene. In view of the above, it is necessary that services should be established, or re-established, as rapidly as possible, either through setting up temporary systems, or through the repair and/or temporary modification of existing systems as well as environmental health professionals providing specialised care services hospitals and relief centres and in search and rescue operations.

Organisation of environmental health activities during emergencies is very important to ensure common understanding of the roles and responsibilities of all parties, and ensuring a timely flow of information. Environmental health personnel will liaise and cooperate in many ways with other health workers, Red Cross/Red Crescent society staff and other community workers. For example, environmental health staffs are likely to be stationed in large shelters, reception stations, short-term camps, and longer-term settlements for displaced people and refugees. In addition, they are also likely to be required in hospitals and health centres to repair or manage any water and sanitation installations on site, and advice on measures to maintain environmental health quality when

facilities are used by very large numbers of people. This is all the more important because of the tendency for healthcare centres to become gathering points for survivors.

Table 1: Numbers of Environmental Health Personnel Needed in an Emergency

Item	Number of Personnel		
Population affected	Sanitary Engineer	Sanitarian	Auxiliaries
Less than 1, 000	-	1	1 – 2
1, 000 – 10, 000	-	1	2 – 5
10, 000 – 50, 000	1	2	5 – 10
50, 000 – 100, 000	1 – 2	2 – 3	10 – 15
For each additional 100, 000	1	2	10

Source: WHO, (2002)

Environmental health personnel will liaise and cooperate in many ways with other health workers, Red Cross/Red Crescent society staff and other community workers. For example, environmental health staffs are likely to be stationed in large shelters, reception stations, short-term camps, and longer-term settlements for displaced people and refugees (WHO, 2002). In addition, they are also likely to be required in hospitals and health centres to repair or manage any water and sanitation installations on site, and advice on measures to maintain environmental health quality when facilities are used by very large numbers of people. This is all the more important because of the tendency for healthcare centres to become gathering points for survivors. Emergency field teams for assessment and initial response should be responsible for assessing environmental health needs; liaising with local health workers; identifying needs for priority water supplies; sanitation; vector control; and surveillance in specific operational areas. Other specialised emergency environmental health functions such as "Food and general sanitation" refers to environmental health measures in mass feeding centres (APC, 2007), the management of mortuary services, and the monitoring of the general environmental health situation in collaboration with epidemiological surveillance including coordination of emergency response activities in which arrangements must be made at every level for collating and sharing essential information, and for taking decisions on resource use with the basic aim to (WHO, 2002):

- Share and interpret data on existing threats and urgent needs
- Identify priorities for collective action
- Identify useful resources that are actually available
- Allocate resources as effectively as possible in relation to the priorities identified

- Seek and identify ways of filling resource gaps
- Prevent duplication of programmes and overlapping roles
- Minimise gaps in services.

SELF-ASSESSMENT EXERCISE

i. Describe assessments of the situation and evacuation in preparedness and response in emergency situations.
ii. Discuss environmental health measures and organisation of environmental health activities in preparedness and response in emergency situations.

3.2 Personnel Management, Equipment and Supplies, Transportation and Logistics, and Telecommunication

Personnel managers in emergencies and disasters face unusual problems, and special arrangements often need to be made to ensure an effective and rapid emergency response (WHO, 2002). The staff will generally be working for long hours under difficult and possibly dangerous conditions. Many staff may be absent as a result of death or injury, transportation difficulties, or concern for family needs and survival. Emergency procedures should be designed that can function adequately with reduced staff numbers. Replacement management staffs need to be identified and legally empowered in advance to take over in the absence of those originally designated.

A flexible approach is needed to allow staff to use their full range of skills, even if that means changing accepted roles and responsibilities. In view of the professional function involved, well-trained people are needed at policy-making levels, for technical services, surveys, and overall planning and supervision. They may include managers, engineers, medical doctors, epidemiologists, or environmental scientists, depending on the availability of personnel and the specific responsibilities concerned.

The most important requirement, apart from experience and managerial skills, is the ability to communicate (WHO, 2002). Workers from a number of related fields are needed to assist professional environmental health staff in making surveys, and to control water quality, food sanitation and waste disposal. They will also assist in vermin control and with the work of auxiliary personnel. These workers may come from a wide variety of backgrounds, but appropriate training courses and experience should prepare them for their roles in emergencies. They may include medical assistants, nurses, pharmacists, and humanitarian and welfare workers who have been trained in emergency environmental health work. Auxiliary personnel are needed to monitor the functioning

of all sanitary installations; to supervise food hygiene, vermin control, disinfection and volunteers; and to provide health education. The auxiliaries should have received formal education or training in the main aspects of environmental health, since they will have to carry out the bulk of the field work.

In this professional function, there will be need for flexibility in the use of human resources such that environmental health measures may be carried out by a variety of people such as professional environmental health staff, such people may include primary health-care workers, social welfare workers, teachers and other development workers (WHO, 2002). They may be the only people available to take charge of meeting the immediate needs for water, shelter and sanitation, especially in isolated localities. This should be borne in mind when designing training programmes and when organising mobile field teams of trained environmental health specialists, to ensure that these other workers are adequately supported and that their capacities are used to best effect.

There should be Cooperation with the private sector (WHO, 2002). If too few public sector environmental health workers are available, they may be supplemented by private sector workers, including (WHO, 2002):

- Industry-based and consulting civil and sanitary engineers
- Private laboratory personnel
- Dairy workers
- Industrial cleaning staff
- Railway and airline sanitation workers
- Commercial pest-control operators
- Teaching staff at universities and institutes with expertise in environmental health and sanitary engineering.

Working with volunteers will always come up and volunteers will usually come forward often from existing community-based organisations, youth groups and sports clubs, etc. They may be able to provide skilled and unskilled help, and provide a communications channel with the affected community. They may be vital actors in the recovery process. All volunteers will need to be supervised by qualified environmental health personnel to ensure that they work effectively and that they take no unnecessary risks (particularly with chemical or radiological hazards, such as when using chemicals for vector control).
Facilities for emergency personnel will be required by emergency personnel and this will vary substantially according to the customary level of basic support, the task involved and the local conditions generated by the emergency. Broadly, however, all facilities will have common requirements, including (WHO, 2002):

- Basic personal needs
- Family support
- Safety and security
- Emotional support and counselling
- Office facilities
- Facilities for maintaining transportation and communications.

In addition support for specialist activities in emergencies will be require, including specific safety services; storage for special equipment and supplies; repair facilities for equipment; computer equipment; and specialised laboratory services (WHO, 2002). These requirements will, in most places, be fairly limited and concerned mainly with carrying out assessments, investigating disease outbreaks, vector control and monitoring a limited number of chemical and radiological hazards. Personnel who carry out assessments and investigate outbreaks of disease should have good access to communications and be given priority for transportation. Special arrangements should be made for samples to be sent back to laboratories.

In the area of subsistence needs of personnel, emergency personnel will need to be supported while they give support to others (WHO, 2002). Work may involve long hours in isolated situations without power supplies, safe drinking-water and waste disposal. Workers also run a relatively high risk of exposure to unfamiliar diseases. A relief worker who falls sick becomes part of the problem, rather than part of the solution (WHO, 2002). To maintain morale and efficiency, emergency workers will need access to clean water and food, and facilities for sleeping, washing and cooking. Cash for personal and official expenses is also required.

Security and safety needs of personnel in many areas, is likely to be a major problem, particularly for female emergency workers and those in charge of valuable equipment (WHO, 2002). In all post-disaster situations, and particularly during times of conflict, agencies should provide all necessary security arrangements for their staff. These include an assessment of the security situation; appropriate guidelines for staff, depending on the level of insecurity and the nature of the risks; appropriate transportation and communications equipment; safe places to sleep; secure places to store equipment and vehicles; permits and photo-identification; up-to date security briefings and information on current risks; and evacuation arrangements and procedures for staff in case of need.

Psychological needs of personnel are necessary (WHO, 2002). Some environmental health personnel may need welfare support and counselling when dealing with death and disruption on a large scale,

following the death or injury of family members or friends, or because of loss of housing and personal effects. Support can be provided by other team members and friends but, wherever possible, professional help should also be available. To remain effective, emergency workers need to know that their families are alive and are provided with basic security and personal support. It is particularly important to provide all available information about the fate of family members and close friends. Staff will need to be reassured that support is being provided to any injured family member and to young children or other dependants in the family. To reduce stress during long and intensive operations, particularly those in insecure situations, recreational and rest periods need to be planned, preferably away from the operational area.

Basic administrative support for personnel will be needed. The organisation responsible for environmental health will need to update and safely store details of staff addresses and present places of deployment (WHO, 2002). There should also be a system for recording the number of hours worked in the field, any injuries sustained on the job, and any emergency payments made. Newly-assigned staff and teams from outside the region will need information on the extent of any damage, the location of damaged facilities, the organisation of the emergency operation, and a security and safety briefing. Newly-assigned staff should also be briefed on any traditional, religious, or cultural customs of the affected community that they should be aware of.

On equipment and supplies, lists of equipment and supplies for environmental health will generally need to be drawn up locally, taking account of local practices and conditions, and can be at almost any level of sophistication (WHO, 2002). The needs to be met may range from those of the rural village to those of a major urban conurbation. Basic needs, however, may include specific requirements for more complex items, such as computers and communications equipment. Standardised equipment, including forms for reporting and for requesting supplies that are developed and held as a preparedness measure, makes operations faster and more consistent, and makes response training easier and more effective. The categories of equipment to be considered include (WHO, 2002):

- Equipment for personnel
- Equipment for emergency water supplies
- Equipment for emergency sanitation
- Materials, tools and consumables needed to repair and operate damaged urban water and sanitation networks
- Equipment for vector control
- Items used in monitoring and surveillance
- Laboratory equipment and materials

- Maps, reports and other materials that provide information on the area and the disaster, and allow information to be updated and communicated
- Administrative and office items.

On Procurement, there is no need for environmental health agencies to stock all the items that they need, as long as they can be purchased locally, or brought into the area rapidly when needed. In many countries, the procedures for requisitioning supplies are complicated and lengthy, and some supplies may need to be brought in from another country. To avoid delaying the response, emergency personnel should not delay the requisitioning and purchasing of urgently needed equipment in a disaster. Heavy equipment is usually very expensive and need not be stored by environmental health services (WHO, 2002). It is usually available from the army or from the highway or public works departments. Certain supplies, such as kitchen utensils, temporary shelters, etc., may be the concern of relief agencies. The environmental health requirements for these supplies can be discussed with other agencies involved in relief work. Lists of essential chemical supplies, pipes, fittings and jointing materials, tools for a mobile repair unit, spare pumps and power units, trucks, tanks, etc. can be prepared, in collaboration with the officials in charge of water- and sewage-treatment works. Follow-up is necessary to ensure that the equipment and supplies for the emergency operation of water and sewage systems are purchased and then stocked in such a way as to facilitate their speedy delivery and use.

It is important that the equipment and supplies stored for emergency use conform to standard specifications, so that they are robust, appropriate to emergency conditions and reliable. The United Nations system, the IFRC and several international NGOs, such as Oxfam and Médecins Sans Frontières, have developed detailed specifications for relief items, based on many years of research and field-testing (WHO, 2002). Field staff should use standard equipment lists, or give detailed specifications when ordering equipment and supplies, to avoid procurement and logistics staff supplying the wrong items, or items that cannot be used efficiently. Ministries of works or ministries of water supply will often be able to provide standard specifications for approved water supply and sanitation equipment.

On storage and distribution, there are various storage options. Planners should designate sites for storage in advance, if possible. Suitable sites may include commercial warehouses, or water supply and sanitation service depots, where suitable buildings and stores management procedures already exist. If necessary, items can be transported in lockable containers that can be left on or near the site of operations. The

supplies required for most environmental health activities in emergencies are generally simple to store and handle. However, secure storage and handling arrangements and staff training may be needed for water treatment and vector-control chemicals, and large storage spaces and mechanical handling equipment may be needed for heavy or bulky pipes, pumps, valves, etc. Inventories should be regularly reviewed by environmental health staff and updated (WHO, 2002). Periodic tests must be carried out to ensure that the equipment is always in working condition. The same equipment should be used for training purposes, but should always be repacked carefully after each training exercise, and any lost or damaged items noted on the inventory. To ensure that essential items are always available, supplies in, supplies out and stock levels should be closely monitored and coordinated with field staff. It is important to record the end destination for items in the stock records, to monitor that they are being used appropriately and to provide reliable reports.

Transportation and logisticsis needed in emergency preparedness and response for a range of environmental health operations during emergencies, including (WHO, 2002):

- Moving assessment and operational teams
- Road clearance
- Moving people affected by disaster
- Moving equipment and supplies
- Trucking water
- Moving human bodies
- Moving solid waste
- Moving animal corpses (especially after floods and cyclones)
- Repair and reconstruction.

The organisation of transportation should be planned in advance. Vehicles and their supporting services are expensive and it is difficult to assemble reliable fleets at short notice. An organisation should estimate what and how much it will need to move, and arrange for its existing resources to be increased during an emergency. Still on transport and logistics, it is essential to select the right vehicles for the specific tasks envisaged. For example, in damaged urban areas, a major problem may be debris that can damage tyres and suspension systems. Environmental health agencies may need (WHO, 2002):

- Ordinary cars to use for office administration
- Four-wheel drive personnel vehicles
- Minibuses to collect and transport staff
- Trucks

- Rubbish collectors and vacuum (sewage) trucks
- Fuel and water tankers
- Bulldozers and other road-clearance equipment
- Graders
- Compacters
- Cranes
- Cargo-handling equipment (e.g. forklift trucks)
- Boats.

Other issues relating to transport and logistics will include sources and numbers of vehicles required whereby it may be possible obtain vehicles from (WHO, 2002):

- The environmental health organisation
- Government agencies, including public works departments and the armed forces
- Contractors
- Vehicle hire companies
- Other partners, e.g. nongovernmental organisations

The numbers of vehicles required will depend on local conditions and on the size of the population and area concerned; repairs and maintenance in which case it will be ensured that trained drivers and competent vehicle mechanics can substantially increase the efficiency of a vehicle fleet by keeping more vehicles on the road for longer periods; road operations such that information would be coordinated and shared among organisations involved in the emergency response such as breaks in road networks, road capacity (including bridge loading limits, and any restrictions on height and width), the potential effects of any adverse weather conditions; Air operations in which specialist advice should be sought on airport capacity and aircraft landing requirements. Account should also be taken of equipment (including lifts and lighting) and labour requirements for unloading, and arrangements for safe refuelling and for restarting engines.

Telecommunications are the foundation of an effective emergency response on any scale. If installed from the start, they will ensure that the information on the situation is adequately transmitted, facilitating rapid reaction and personnel security (WHO, 2002). Use of standardised equipment allows an efficient telecommunications service to be provided with good user support and at a lower cost in the long run. The system used must be based on experience and field feedback. Training, advice and maintenance must be arranged, and in a large-scale emergency response, one or more telecommunications technicians may be required to carry out these tasks. Nonstandard telecommunications

systems should be used *only* after consultation with the local authorities responsible for telecommunications and/or with relief agencies operating in the area. It is essential that personnel are trained in the use of telecommunications equipment, basic communications procedures and radio discipline, to avoid miscommunications and blocked communications channels.

3.3 Financial Procedures, Rules, Standards and Guidelines in Disaster Response, and International Assistance

Financial procedures in preparedness and response in emergency should be such that contingency planning must cover access to sufficient cash for essential local purchases and for emergency spending on repairs and other urgent work (WHO, 2002). Rapid procedures for approving contracted services (or standing arrangements) are also necessary. Transparent and simple methods should also be established for accounting for these financial decisions. In general, more elaborate rules for the purchase of materials and contracting of services may have to be suspended in disasters to give environmental health personnel the flexibility to overcome deficiencies and replenish any stocks that have run low, are damaged or are inaccessible (WHO, 2002). Streamlined and precise procedures for granting authority for such transactions, and authorization limits for different staff levels therefore need to be established in advance.

In emergency situations, budgets may need to be revised from time to time as the situation changes, or as new information on needs and resources becomes available. It is important for managers to stay in close contact with funders, to facilitate the process of renegotiation. Provision for audits and for exchange of financial information between field staff and programme administrators is necessary to ensure that systems for financial control are established and operated correctly. It is usual for very large amounts of money to be spent rapidly in emergencies and extra care is needed to ensure that money is not wasted or diverted. Field staff may be given the responsibility for managing the budgets for the work they carry out (WHO, 2002). In such cases, it is essential that up-to-date and reliable financial information is provided to them so that they can monitor and control spending. Senior staffs need to carry out financial forecasting to ensure that current and future needs for funds are met.

Cash planning is necessary to avoid field staff running out of cash for urgent local expenditures. If large amounts of cash are used for local purchases and paying casual labourers, then special cash-handling procedures may be needed, to enable field staff and office staff to work safely and avoid losses. Field staff should be aware of the need to

provide information for writing financial reports. Their job is made much easier if they are provided with standard financial reporting forms. The increasing use of portable computers for field work means that financial information can be recorded electronically by field staff, reducing the number of calculation errors and the need for data entry in a central office.

On rules, standards and guidelines in disaster response, there is an inevitable tendency in areas affected by disasters to relax the application of day-to-day administrative procedures and to reduce the scope of, or abandon, many regular monitoring tasks. Staff will be under intense pressure as they assist in re-establishing a basic framework of public health. However, basic rules for the application of professional standards are needed to ensure an effective emergency response and accountability for the considerable resources mobilised (WHO, 2002). In addition to existing public-health and safety rules in a given country or locality, and regulations governing the work of environmental health workers, the other agencies involved in relief operations will have their own rules and standards;

Also, rules and guidelines in emergencies is important especially and during post-disaster recovery, every kind of improvisation may be attempted, often by people unaware of the direct risks involved or the wider effects. Examples include (WHO, 2002):

- The patching and reconnection of parts of water-supply systems using improvised and leaky joints
- Connecting to unsafe drinking-water sources, and improvising plumbing in mass care centres, resulting in back-siphonage
- Indiscriminate use of toxic agricultural insecticides in attempts to control insect vectors
- Mass feeding operations in which critical aspects of food hygiene are neglected
- Inappropriate clean-up after industrial accidents that may give rise to new risks, such as the introduction of hazardous chemicals into watercourses.

Rules and guidelines, when applied in an appropriate way, ensure that rapid and innovative action can be taken in emergencies, without creating new risks and damage to infrastructure.

According to WHO (2002), the basic principle**s** for creating rules for emergencies ensure that, first, it is essential to ensure that rules and regulations for emergencies are as straightforward as possible, are appropriate for situations where there is a clear risk to large numbers of people, and make minimal demands on staff time and resources. A

balance must be struck between attempting to avoid catastrophic breakdowns in public safety, and encouraging initiative and creative contributions to recovery. Responsibilities for specific tasks should be assigned to designated individuals in an organisation; replacements should be nominated to take over if these individuals become casualties or are unable to make contact. Second, written authorisations or permits to carry out specific measures and to take specific decisions should be provided, and this fact should be made known as widely as possible both before and after an emergency. Certain relief and recovery tasks, such as the re-commissioning of parts of water-supply systems, vector-control activities and the emergency disposal of hazardous wastes, should be "signed off" by a responsible individual. Finally, the risk of inappropriate and dangerous decisions and actions should be reduced by controlling access to the most important resources and facilities, and by screening and briefing any new staff or volunteers. When possible, essential safety measures should be summarised, using pictures as well as words, if necessary, in a single, robust and easily carried document such as coloured, laminated card, or simply a clearly duplicated sheet of paper, that can be stockpiled alongside operational supplies.

Rules concerning foreign relief workers in disasters with an international dimension, where relief workers from many countries may be involved, certain legal and administrative difficulties are almost inevitable in some form or other (WHO, 2002). Foreign professional staff, including medical personnel, engineers and other technicians, will generally not be licensed to practice in the affected country, and special regulations may be needed to allow them to do so. Increasingly, arrangements for employing international specialists are becoming formalised by agreements between governments and with international agencies and nongovernmental organisations. Examples include UNHCR's arrangements with specialist agencies and technical consultants, and IFRC's Emergency Response Units and Field Assessment and Coordination Teams.

As regards international standards and codes of conduct for humanitarian response, for many years, international non-governmental humanitarian agencies have been developing and using guidelines and professional approaches to humanitarian work. Examples include technical manuals, training courses, financial procedures and equipment kits. Since the early 1990s, there has been considerable collaborative work to create and apply codes of conduct and standards, to improve their performance and accountability. Some of the more important initiatives are described below (WHO, 2002).

The Code of Conduct for the International Red Cross and Red Crescent Movement and NGOs in Disaster Relief.

This code of conduct, published in 1994, sets out 10 principles that govern the work of subscribing agencies, and makes important recommendations to the governments of disaster-affected countries, donor governments and intergovernmental organisations to facilitate application of the code of conduct.

Concerning international assistance, primary responsibility for disaster relief almost always rests with the government of the affected country (WHO, 2002). Prior planning is needed both for requesting international health assistance and for handling such assistance. As far as possible, requests should be based on the field assessment of conditions. It may be appropriate to discuss major requests with local WHO offices and with the staff of major international relief agencies in the country, many of whom may have extensive previous experience.

In-country coordination requests for assistance should be made by a single government body and all offers of assistance should be received by this body for onward transmission to those concerned. In the case of Nigeria for this purpose it is the National Emergency Management Agency act (www.nema.gov.ng). Health staff linked to the council should be the final authority; they should be informed of all proposed medical and environmental health inputs, and should be able to regulate and control any shipments. United Nations organizations and specialised agencies such as WHO, UNICEF, UNHCR, and the World Food Programme (WFP) are responsible for providing advice and assistance to the government, in accordance with their mandates, and are often represented in the national disaster council (WHO, 2002). This assertion is confirmed by the National Disaster Management Framework of Nigeria (www.nema.gov.ng). They will also provide technical assistance and material support.

Forms and functions of international assistancein the environmental health sector that can be provided may include (WHO, 2002):

- Expertise and assistance with planning and implementing activities
- Components for emergency repairs to damaged water-supply systems
- Tanks, pumps, piping components and tools for emergency water supplies for large concentrations of people
- Resources (funding for vehicles, fuel and spare parts) to support the emergency delivery of water by road tanker
- Laboratory and water-testing equipment.

Integrating international staff and local specialists who are well-qualified staff can make a substantial contribution to relief work. In particular (WHO, 2002):

- They show people that, despite the overwhelming problems, there are ways of imposing order on the situation
- They recognise that what people can do in a short time is limited and help local officials focus on what they can actually cope with. They encourage local staff to seek out those problems where intervention is likely to be both feasible and effective
- They encourage staff to use information as a management tool, and to use appropriate methods to ensure that the information that they use is accurate and representative.

Experience suggests the importance of integrating international staff and local specialists. The latter are more likely to be aware, for instance, of local practices in the use of water sources and other local resources, and be better able to assess the feasibility of adaptations for emergency use. They will also be more aware of seasonal variations and local organisational constraints, and be better able to communicate directly with survivors (WHO, 2002).

On guidelines on employment of international assistance teams, ideally, countries should establish guidelines on the employment of international assistance teams. The guidelines should cover the following areas (WHO, 2002):

- Ability to meet internationally recognised standards for qualifications and proficiency
- Self-sufficiency in personal needs and equipment
- Commitment to remain in country for a certain length of time, or until certain activities have been completed
- Ability to react sufficiently quickly and with sufficient staff and other resources
- Knowledge of the country, or experience in the technical area concerned
- recognition by, and support from, the United Nations agency concerned (e.g. UNHCR in refugee emergencies)
- Capacity and commitment to enable members of the local population to participate in their operations.

It is important to avoid situations, in which teams arrive with high-technology equipment, remain for only short periods of time, and then withdraw without stabilising the situation in the longer term. Sophisticated equipment for water-supply systems or vector control is useless in the longer term if supplies of spare parts are not continued,

qualified repair and maintenance staffs are not available locally, and local people are not properly trained to operate the equipment.

4.0 CONCLUSION

It is important to know that preparedness and response in emergency situations focuses on the reduction of the impact of natural disasters and emergencies. Standardised processes must be adopted systematically to ensure objectivity and to enable the humanitarian response to be made to the needs identified. Field-based assessments must allow for preliminary information to be confirmed and the details necessary for organising specific relief to be gathered. A flexible approach is needed to allow staff to use their full range of skills, even if that means changing accepted roles and responsibilities. Therefore, well-trained people are needed at policy-making levels, for technical services, and overall planning and supervision. They may include managers, engineers, medical doctors, epidemiologists, or environmental scientists, depending on the availability of personnel and the specific responsibilities concerned. It should be noted here that the role of environmental health staff in preparedness and response especially in a public health emergency will vary according to the type and severity of the situation. In every conceivable disaster, Environmental Health (EH) professionals have an important responsibility in identifying and mitigating different environmental hazards that can affect the health of a community. Working with volunteers will always come up and volunteers will usually come forward often from existing community-based organisations, to provide skilled and unskilled help, and provide a communications channel with the affected community. Engagement of international assistance, for disaster relief almost always rests with the government of the affected country and approval of requests should be appropriately discussed with local WHO office on guidelines such as commitment to remain in country for a certain length of time, or until certain activities have been completed; in the interest of public health.

5.0 SUMMARY

This unit is about preparedness and response in emergency situations. We know now that this is the phase of the disaster-management cycle that attracts the most attention and resources. In the unit, we discussed assessments of the situation which is about looking at the situation presented by the disaster, however brief, to ensure that any action undertaken is effective; evacuation involves the temporary transfer of a population (and to a limited extent, property) from areas at risk of disaster to a safer location; environmental health measures which is not possible to define as each situation demands a specific response; and organisation of environmental health activities during emergencies,

which is very important to ensure common understanding of the roles and responsibilities of all parties, and ensuring a timely flow of information.

Also, we have discussed personnel management in which we noted that these personnel face unusual problems, and special arrangements often need to be made to ensure an effective and rapid emergency response. The staff will generally be working for long hours under difficult and possibly dangerous conditions. A flexible approach is needed therefore to allow them to use their full range of skills, even if that means changing accepted roles and responsibilities; equipment and supplies where we noted that lists of equipment and supplies for environmental health will generally need to be drawn up locally, taking account of local practices and conditions, and can be at almost any level of sophistication. The needs to be met may range from those of the rural village to those of a major urban conurbation; transportation and logistics is needed in preparedness and response for a range of environmental health operations during emergencies, including moving assessment and operational teams, road clearance, moving people affected by disaster, etc. We note that the organisation of transportation should be planned in advance; and telecommunications which we say are the foundation of an effective emergency response on any scale and that if installed from the start, will ensure that the information on the situation is adequately transmitted, facilitating rapid reaction and personnel security. The use of standardised equipment allows an efficient telecommunications service to be provided with good user support and at a lower cost in the long run.

Equally discussed in this unit were the following; financial procedures in preparedness and response in emergency which should be such that contingency planning must cover access to sufficient cash for essential local purchases and for emergency spending on repairs and other urgent work. Transparent and simple methods should also be established for accounting for these financial decisions. Rules, standards and guidelines in disaster response where there is an inevitable tendency in areas affected by disasters to relax the application of day-to-day administrative procedures and to reduce the scope of, or abandon, many regular monitoring tasks; and international assistance. Primary responsibility for disaster relief almost always rests with the government of the affected country, and that prior planning is needed both for requesting international health assistance and for handling such assistance.

6.0 TUTOR-MARKED ASSIGNMENT

i. Write notes on transportation and logistics, and telecommunications in preparedness and response in emergency situations.
ii. Explain financial procedures; rules, standards and guidelines in disaster response, and international assistance.

7.0 REFERENCES/FURTHER READING

World Health Organisation (2002).Environmental health in emergencies and disasters: Apractical guide. World Health Organisation, Geneva.

Twin Cities Metro Advanced Practice Center (2007). Environmental Health: EmergencyResponse Guide. USA:

Management Framework (NDMF)downloaded from www.nema.gov.ng

National Emergency Management Agency (NEMA) Act (1999)(www.nema.gov.ng).

UNIT 3 CHECKLIST IN EMERGENCY SITUATIONS

CONTENTS

1.0 INTRODUCTION

Checklistis a list of features and functions which we can use as baseline for testing. According to *Wikipedia*, the free encyclopedia, a checklist is a type of informational job aid used to reduce failure by compensating for potential limits of human memory and attention. It helps to ensure consistency and completeness in carrying out a task. A basic example is the "to do list." A more advanced checklist would be a schedule, which lays out tasks to be done according to time of day or other factors.

Using the checklist we can know what the status of each function are and features like whether it's implemented, applicable and so on. Checklists need to be relevant to whatever you are checking, and detailed enough to enable you to do a thorough job. A checklist needs to be constructed as questions and clear steps, in some sort of logical

sequence. The best way to do this is to work through all of the issues that are likely to be important and prepare a set of written comments about the product, task or environment. Out of these written comments you can prepare your checklist. In this unit, we will be discussing different checklists in use in relation to emergency situations.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- identify the application of checklist in emergency response
- describe checklist for emergency response in relation to recovery and planning
- explain checklist for emergency in relation to social, economic and natural environment
- discuss checklist for emergency in relation to evacuation relief centre, managing people, and community recovery evaluation.

3.0 MAIN CONTENT

3.1 Application of Checklist

The application of checklist can be very diverse. According to information, checklist can be used in many ways and in the following areas (http://en.wikipedia.org):

- Pre-flight checklists aid in aviation safety to ensure that critical items are not forgotten as in the figure below;
- Used in medical practice to ensure that clinical practice guidelines are followed. An example is the surgical safety checklist developed for the World Health Organisation by Dr. AtulGawande(http://en.wikipedia.org);
- Used in quality assurance of software engineering, to check process compliance, code standardisation and error prevention, and others.
- Often used in industry in operations procedures.
- Used in civil litigation to deal with the complexity of discovery and motions practice. An example is the open-source litigation checklist.

Fig. 8 : A Pilot of a DC-10 Consulting his Checklist

3.2 Emergency Preparedness Checklists

There are checklist for use in emergency preparedness and response (WHO, 1999, Commonwealth of Australia, 2011). The checklists can be used for developing or evaluating emergency preparedness programmes. Some of the checklists would be of value during response while others can be used during recovery operations (WHO, 1999). The checklist below will review from policy down to response and recovery operations.

Policy

- Have all emergency management parts of relevant legislation been located, and have the implications of this legislation been considered in community emergency preparedness?
- Have any inconsistencies in the legislation been reported to central government?

Is there power for the following actions during emergencies?

- Commandeering of resources.
- Evacuation of people at risk.
- Centralised coordination of emergency work at the national, provincial, and community levels.

Vulnerability Assessment

Is a vulnerability assessment available for emergency preparedness, as well as for emergency response and recovery work?

Are there procedures for reviewing vulnerability assessment in the light of?

- Community change
- Vulnerability change
- Hazards change
- Capacity/capability change

Planning

Have private organisations and NGOs been involved in the planning process?

- Has assistance or guidance in developing emergency plans been provided to government, private organizations, and NGOs?
- Are there emergency plans that are related to the community emergency plan?
- If such plans exist, what are the implications for your plans?
- Has contact been made with people in other organisations or jurisdictional areas who may be able to assist the community?
- Has the plan been approved by the chief executive of the community administration?
- Has the plan been endorsed by all relevant organisations?
- Has a person or organisation been assigned responsibility for developing the community emergency plan?
- Who is responsible for keeping the emergency plan up to date and how often is it to be formally reviewed?
- Do people who hold existing plans receive amendments?
- Is a distribution list of the plan maintained?
- Have the community emergency management structure and organisational responsibilities been described?
- Who is responsible for the overall management?
- Who is responsible for the operations of particular organisations?
- Who is responsible for coordinating particular tasks?
- Are all the necessary tasks assigned to organisations and personnel?
- Are the responsibilities of all organisations described?
- Does the plan contain a summary of the vulnerability assessment?
- Has the relationship between different levels of planning been described?
- Have mutual aid and twinning agreements with adjacent communities been made?
- Is the plan consistent with related plans?

- Does the plan make reference to the legislation that establishes the legal basis for planning and carrying out emergency measures?

Training and Education

- Who is responsible for the various training and education requirements of emergency workers and the public?
- Has a training needs analysis of emergency workers been performed?
- Have a number of different public education strategies been implemented?
- How quickly are new personnel in organisations made capable of working in emergency management?
- Is institutional memory being preserved? For example, do people have to "reinvent the wheel" or are past, practical lessons learned, documented, and passed on?
- Do the capabilities and capacities of organisations improve over time during the implementation of preparedness strategies?

Monitoring and Evaluation

- Is there a procedure for reviewing emergency preparedness on a regular or as-required basis? How is it done and who is responsible?
- How often is the community plan to be exercised? Who is responsible?
- How are the lessons learned from exercises to be incorporated into plans?
- Are multi-organisational exercises run, as well as single-organisational exercises?

Communication

- What forms of communication are available?
- Are there backups?
- Who is responsible for communications maintenance and planning?
- Do people know the relevant radio frequencies and contact numbers?
- Are there contact lists (containing names, telephone numbers, etc.) for all emergency management organisations?
- Do the communications systems allow communication between all relevant organisations?

Search and Rescue

- What rescue tasks may need to be performed?
- Who is responsible, who coordinates?
- Are there procedures for detecting and marking danger areas?
- How search and rescue activities are integrated with other emergency functions, in particular health?

Health and Medical

- Have the ambulance and hospital services planned and been trained for the handling of mass casualties?
- Are they aware of each other's arrangements?
- Are there emergency field medical teams?
- Who manages these on-site?
- Are there arrangements for counseling the public and emergency workers?

Who is responsible for providing this service and who pays for it?

Social Welfare

- Are the arrangements for feeding and accommodating people linked to the registration and enquiry system and the evacuation procedures?
- Is there any arrangement for expediting the assessment of damage to private and public property and payment for losses?
- Do the insurance companies have any cooperative arrangements among themselves?
- Where, when, and how do people have access to insurance companies?
- What is insurance company policy on makeshift repairs or repairs to minimise damage?
- Is there access to legal advisers during emergency response and recovery operations?
- Is there a system for providing legal advice to emergency-affected persons?

Transport and Lifelines

- Who is responsible for each lifeline?
- What are the priorities for repairing damaged lifelines?
- How long should it take to repair each lifeline from the predicted levels of damage?
- How are alternative lifelines to be arranged if required?

Police and Investigation

- Are there procedures to ensure that resources are reserved from the emergency response work to enforce law and order?

Alerting

- Who is responsible for receiving warnings from outside the community?
- Is there a clear system that ensures that all relevant organisations and personnel are alerted?
- Does this system:

Assign responsibility for initiating an alert?
Provide for a "cascade" method of alerting, whereby those alerted are responsible for further alerting where appropriate?
Describe the first actions required by those alerted?
Provide for the cancellation of an alert and the stand-down of organisations and personnel?

Command, Control and Coordination

- Is there a threat to the existence or continuity of government?
- Who is responsible for planning for continuity of government?
- Have all senior management personnel and elected officials been allocated a task?
- To whom do management personnel or officials turn for information?
- Are there procedures for ensuring the safety of government and administrative records (paper and computerised)?
- Have lines of succession been determined to ensure continuity of leadership?
- Have alternative sites for government organisations been identified?
- Have locations for emergency coordination centres been designated and promulgated?
- Are there alternative centres?
- Are they remote from areas likely to be damaged?
- Do they have adequate communications, feeding, sleeping, and sanitation facilities?
- Do they have backup power?
- Is the availability of backup communications equipment known?
- Is there an adequate water supply?
- Is there a designated centre manager and alternative and relieving managers?

- Do the centres have trained staff?
- Are there procedures for developing staff rosters?
- Are there procedures for activating and operating the centres?
- Is there adequate administrative support for the centres?
- Are functions of the centres succinctly described?
- Is there a procedure method for collecting, verifying, analysing, and disseminating information?
- Is there a procedure for recording events, requests for assistance, decisions, and allocating resources?
- Are there internal security arrangements for the centres?
- Has responsibility for day-to-day maintenance of the centres been assigned?
- Are there procedures within and between organizations for the briefing of personnel on an impending or actual emergency?
- Are there procedures for conducting single and multi-organizational debriefings following an emergency or alert?

Information Management

- Are maps of the community (topographic, demographic, hazard, and vulnerability) available?
- Is a public information centre designated as the official point of contact by public and the media during an emergency?
- Are there provisions for releasing information to the public, including appropriate protective actions and devised responses?
- Have agreements been reached with the media for disseminating public information and emergency warnings?
- Are contact details for all media outlets (radio, television, and newspapers) available?
- Who is responsible for providing information to the media?
- Who is responsible for authorising information?
- Who is responsible for emergency assessment and to whom do they report?

How is the information recorded and who relays the information to those concerned?

- Who is responsible for issuing public statements about emergencies?
- Do they have public credibility and adequate liaison with other organisations who may also issue warnings?
- Who is responsible for providing warnings for each likely type of emergency?
- To who is the warning supplied?
- At which warning level is response action initiated?

- What is the purpose of the warnings and what action is required of the public?
- Who will inform the public when the danger has passed?
- Is there a point of contact for members of the public wanting specific information, and is this point of contact publicly known?
- Is there a referral service for directing people to the appropriate sources of information?
- Is there a registration and enquiry system for recording the whereabouts of displaced, injured, or dead persons?
- Is there a system for providing this information to bona fide inquirers?
- Does the community know how to contact the registration and inquiry system?
- Is there a facility for multilingual message broadcasting and an interpreter service for incoming calls?
- Are there plans for establishing public information centres?
- Is the community aware of the existence of these centres?

Resource Management

- Who coordinates resources within each organisation?
- Who is responsible for supplying resources beyond the normal capabilities of each organisation? Who records the use and cost of resources?
- Have arrangements been made with national or provincial military organisations for assistance in times of emergency?
- Is there agreed access to emergency funds?
- Who records the expenditure for future acquittal/repayment?
- What are the limits of expenditure for personnel?
- What tasks can be safely performed by unskilled volunteers?
- Who coordinates this work?
- Is it likely that some organisations will begin public appeals for donations to emergency-affected persons?
- How can these appeals be coordinated?
- How is equitable disbursement of appeal money to be ensured?
- Who coordinates the requests for assistance for the community?
- What sort of assistance is likely to be required?
- Where is this assistance likely to come from?
- Is there an expected form that the request should take?

Is the following information available to help outside assistance?

- Lists of organisations working in the country, with information on their competence and capacity to be involved in emergency response and recovery activities?

- Lists of essential response and recovery items not available in the community that would need to be obtained abroad, with available information on potential international sources?
- Information on customs and taxation regulations covering the importation and transit of response and recovery (and other) items?

Is the following information available?

- Lists of essential response and recovery items, with specifications and average costs?
- Lists of local manufacturers and regional manufacturers or suppliers of response and recovery items, with information on quality, capacity and capability, delivery times, and reliability?
- Information on essential response and recovery resources that will allow a rapid response, e.g. water supply systems, sanitation systems, health networks, alternative shelter sites and materials, ports and transport networks, warehouses, and communications systems?

Evacuation

- Does any person or organisation have the authority to evacuate people who are threatened?
- Are there designated locations to which evacuees should travel?
- How many people may need to be evacuated?
- In what circumstances should they be evacuated?
- Who will tell people that it is safe to return? What will trigger this?
- Are staging areas and pick-up points identified for evacuation?
- Are evacuees to be provided with information on where they are going and how they will be cared for?
- Is there security for evacuated areas?
- How are prisoners to be evacuated?
- How are the cultural and religious requirements of evacuees to be catered for?
- Who is responsible for traffic control during evacuation?
- How are evacuees to be registered?

Response and Recovery Operations

- Has a community emergency committee been set up?
- Have response teams been organised?
- Is anything being done for isolated families?

- Have arrangements been made to pick up the injured and take them to the health centre or hospital?
- Have people been evacuated from dangerous buildings?
- Have steps been taken to resolve the most urgent problems for the survival of the victims, including water, food, and shelter?
- Has a place been assigned for the dead to be kept while awaiting burial?
- Are steps being taken to identify the dead?
- Has an information centre been established?
- Have communications been established with the central (regional, national) government?
- Has there been a needs assessment to consider the number of people needing assistance, the type of assistance required, and the resources locally available?
- Are steps being taken to reunite families?
- Have safety instructions been issued?

Are steps being taken to circulate information on?

- The consequences of the emergency?
- The dangers that exist?
- Facts that may reassure people?
- Are communications being maintained with the central government?
- Is information on requirements being coordinated?
- Are local volunteer workers being coordinated?
- Are volunteer workers from outside being coordinated?
- Is inappropriate aid being successfully prevented and avoided?
- Are response and recovery supplies being fairly distributed?
- Is contact being maintained with all family groupings?
- Have families who are living in buildings that are damaged but not dangerous been reassured?
- Has an appropriate site been chosen for temporary shelters?
- In setting up shelters for emergency victims, have family and neighbourhood relationships and socioeconomic and cultural needs been taken into account?
- Have the victims been organised in family groupings?

Have the essential problems been dealt with:

- Water supply?
- The provision of clothing, footwear, and blankets?
- Food supply?
- Facilities for preparing hot meals?

- The installation of latrines?
- Facilities for washing clothes and pots and pans?
- Collection and disposal of waste?
- Have short meetings been arranged in the community to discuss the various problems and find solutions to them?
- Have steps been taken to encourage solidarity, mutual assistance, and constructive efforts among the people?
- Have school activities started up again?
- Have initiatives been taken for community action by children?
- Have steps been taken to combat false rumours?
- Have measures been adopted to ensure that there is no favouritism in the distribution of response and recovery supplies?

Is care being taken to make certain that volunteer workers from outside do not take the place of local people but help them to take the situation in hand?

- Have the victims been encouraged and helped to resume their activities?
- Have initiatives been taken to facilitate economic recovery, putting local resources to good use?
- Have steps been taken to ensure that people participate in drawing up plans of recovery and development and that those plans are in line with needs and the local culture?

Are arrangements in force to avoid?

- Delays?
- Crippling disputes?
- Favouritism?
- Speculation?
- Dishonesty?
- Violence?

3.3 Checklist-Undertake Pre-Event Recovery Planning

This checklist is about preparedness and planning'. Preparedness activities and the development of recovery plans, is important to revisit the purpose of recovery and the involvement of community at all stages. Tasks for preparedness primarily include planning tasks such as the development of pre-event recovery plans and those tasks necessary to maintain preparedness (to activate those plans when required) (Commonwealth of Australia, 2011). The suite of activities involves community engagement and awareness and action. This is why a

checklist is necessary here and the areas to be covered include (Commonwealth of Australia, 2011):

Identify emergency risk

- Access emergency risk register for the relevant jurisdiction/area/region, if completed.
- Take information from the process to inform the development of recovery planning.
- Identify community strengths.

Engage Key/Relevant Stakeholders

- Based on risks identified, engage key stakeholders, including community representatives, local government, and government and non-government agencies.
- Provide them with details of risk assessment and request that they consider the potential impacts of this assessment on their community and area of responsibility.

Coordinate All-hazards Pre-Event Planning

- Assemble the key stakeholders and facilitate discussion around identified risks and community recovery planning
- Ensure that key stakeholders have emergency activation capability and procedures, and operational capacity
- Establish escalation procedures
- Agree and assign roles and responsibilities
- Develop a process for activating and implementing an integrated emergency recovery plan for each of the four environments for the relevant jurisdiction
- Gain endorsement of recovery plans from stakeholder organisations.

Exercise, Evaluate and Review

- Plan and undertake exercises to test activation procedures, and stakeholder contingency planning.
- Collectively evaluate outcomes of exercises, identifying successes and opportunities for improvement in recovery planning and request that stakeholders also review their agency-specific emergency contingency planning.

3.4 Checklist-Undertake Community Recovery Management/Coordination

To use this checklist, we have to note that recovery activities assist the affected community towards management of its own recovery. They should be provided in a coordinated way to support disaster-affected communities in the restoration of their social, economic, and physical and environmental wellbeing. The services provided should depend on an assessment of the needs of the disaster-affected community. Again, managing recovery is dependent upon competent people (Human resources) who are willing to work in disrupted and non-ideal circumstances, often engaged in stressful duties. These people—the human resources—whether paid or voluntary, need to be supported and managed appropriately to ensure consistent and effective services are provided to the affected communities, often over an extended period of time. The checklist is thus (Commonwealth of Australia, 2011):

Keeping pace with the evolving situation

- Immediately establish liaison with incident controller and if possible locate a senior recovery officer in the emergency coordination centre.
- Ensure initial and ongoing impact assessment data feed into recovery programmes and processes.
- Continuously review and analyse community needs for service provision planning.
- Establish processes for information from all avenues (public meetings, call centre or recovery centre feedback, debriefings) to feed into planning cycle.
- Adapt community recovery plans in accordance with the evolving or changing community needs and priorities.

Engaging and Empowering the affected Communities

Ensure regular and ongoing engagement with affected persons:

- Provide leadership, facilitation, support and empowerment.
- Create opportunities for community leaders to evolve
- Create opportunities and support for affected persons and communities to lead and manage their own recovery
- Allow communities to self-identify
- Negotiate and agree on the priority set tasks based on community needs and requirements, including short-term/interim fixes
- Build trust through respectful listening and understanding

- Establish active feedback processes and opportunities, including community recovery committee
- Maximise the availability of information to affected persons.

Managing People

- Provide strong, clear and responsive leadership.
- Ensure safe operating conditions for recovery personnel and community
- Ensure that workloads are sustainable by establishing management structures, delegating responsibilities and utilising 'spans of control'
- Ensure that recovery workers, managers and volunteers have defined work times and adequate rest breaks
- Ensure that briefings occur for all oncoming personnel
- Ensure that debriefs are conducted at the end of each shift to ensure capture of information as well as defusing personnel
- Provide opportunities for formal defusing and ongoing emotional and psychological support for recovery personnel
- Avoid convergence by providing clear information and direction as to how non-impacted persons might help.
- Develop a strategy to manage politicians and VIPs.

Managing Resources

- Ensure legislative, statutory and regulatory requirements are observed
- Identify resources and material requirements, including supply chains
- Avoid convergence by providing clear information and direction as to what and how voluntary resources might help
- Establish systems for recording offers of assistance (human resources and material)
- Identify staffing needs early and enable rapid recruitment;
- Ensure that all staff members have appropriate skills and qualifications and relevant authorisations
- Ensure that funding is provided immediately for essential services restoration
- Ensure that all expenditures are recorded.

Managing information and communications

Ensure that data collection and management systems are established as soon as possible and maintained. Ensure that information is continually provided to:

- Affected community members
- Recovery personnel
- Recovery management team
- Recovery management partners and stakeholders
- Organisational hierarchy (managing up)
- Elected representatives.

Form partnerships with media and use their resources to disseminate information. Ensure that information:

- Is relevant
- Is timely
- Is clear
- Is best available
- Is targeted
- Is credible
- Is consistent
- Is coordinated
- Is provided in multiple methods and media
- Provides opportunity for feedback
- Is repeated as appropriate.

Create opportunities for two-way communication through:

- Meetings
- Workshops
- Surveys
- Telephone, email and web sites.

Ensuring Coordination and Integration

Provide coordination of activities and stakeholders to ensure that:

- Services and facilities are restored based on community needs and priority
- Resources are utilised efficiently
- Clear roles and responsibilities are established and adhered to
- Deficiencies and opportunities are identified quickly.

Establish a recovery management centre. Establish and work with recovery committees to plan and develop longer-term strategic and sustainable recovery outcomes. Consider establishing management groups for each of the four environments (social, built, economic, natural) as required, based on nature of event and impact assessments.

Ensure that all four environments are integrated and coordinated, acknowledging the interdependencies between them.

3.5 Checklist for Emergency Response in Relation to Recovery Management/Operational

In many events, communities conduct their own spontaneous recovery, and this needs to be supported by a range of partnerships between government agencies, non-government organisations and the private sector. Increasingly, corporate organisations are becoming more involved. Government is not the only provider of services; therefore, public-private partnerships are integral to recovery planning and management. This checklist corresponds to 'Implementation of services/activities' and it covers thus (Commonwealth of Australia, 2011):

Immediate

Conduct immediate impact/needs assessment (0 to 3 days)

- Obtain briefing from incident controller/recovery coordinator/senior recovery liaison officer
- What has happened?
- Capture as much information on community impact as possible from the incident control centre
- What has been the impact on individuals and families?
- What are priority needs (for affected community and recovery operations)?
- What needs to be done to prevent further damage?
- What hazards exist?

Contact and alert recovery support staff. Activate and brief relevant partners/stakeholders from social, built, economic and natural environment agencies/organisations. Establish data collection and management systems. Establish communications systems with affected persons. Establish community information development and distribution systems. Ensure that systems are in place to manage the wellbeing of recovery personnel. Provide clear information and advice to media and non-impacted persons on how they can help. Establish a management structure, determine/assign responsibilities and define reporting processes. Implement actions to address priority needs. Communicate planned actions to affected communities, recovery management team, stakeholder organisations.

Short to Medium Term

Review *immediate* actions:

- Are priority needs being met?
- Were any missed in immediate assessment or have new ones emerged?

Continue short- to medium-term impact/needs assessment (coordinated and using multiagency deployment)

- What are evolving short- to medium-term needs?

Allow evolution of, and engage with, community leaders and decision makers and discuss longer-term governance and planning. What plans/programmes/relationships/activities/groups existed before the emergency event that might contribute to the recovery effort? Implement outreach programmes if required. Ensure that persons displaced from 'home' communities are provided with mechanisms and strategies to re-engage with their 'home' communities. Coordinate an ongoing impact assessment process through multi-agency deployment. Develop a strategy to avoid excessive or unwanted services. If necessary, establish processes and systems for managing donations of monies and goods and offers of help.

Long Term (ongoing)

Conduct review of *short- to medium-term* activities:

- Are priority needs being met?
- Were any missed in immediate and short-term assessment or have new ones emerged?

Continue the needs assessment process to inform planning, support and service provision. Empower and support affected communities to manage their own recovery. Consider providing executive and administrative support and specific expertise as required. Advocate on behalf of affected communities; to government and authorities for financial and resource support. Establish ongoing information provision. Communicate planned actions to affected communities, recovery management team, stakeholder organisations.

Transition

Work with affected communities to determine appropriate timing and processes for transition from recovery to normal services. Ensure

services are in place to support ongoing needs of affected persons. Identify to government and organisations long-term changes in the community environments resulting from the emergency event (for example, population or industry changes). Communicate planned actions to affected communities, recovery management team, stakeholder organisations.

3.5.1 Checklist on Emergency in Relation to Social Environment

This checklist helps the user to describe the impact of disaster upon people's personal and collective social wellbeing (Commonwealth of Australia, 2011). It also explains to the user that it is important to understand the consequences of a disaster upon the social infrastructure because effective social recovery is the foundation for enabling the progression of recovery in all aspects of the community (including the economic, natural and built environments). Using the checklist in the response—and the recovery effort in relation to social environment will ensure sound coordination of response and recovery efforts.

Components

The social environment includes considerations of:

- Safety, security and shelter
- Health
- Psychosocial wellbeing.

Partners/Stakeholders

Partners/stakeholders in the social environment include:

- Affected communities
- Response agencies
- State and Australian Government (health and human services, communities, education, housing, public health)
- Non-government organisations (Red Cross, Salvation Army, voluntary organisations and service clubs)
- Local government
- Health authorities, doctors, community health
- Representatives of sectors or groups—ethnic, rural, social and sporting clubs
- Media.

Community recovery operational activities

Immediate

Conduct immediate needs assessment. What has been the impact on individuals and families?

- How many affected?
- Mortality and injury?
- Potential for psychological/emotional trauma?
- Displacement?
- Loss of property?
- Loss of pets/companion animals?
- Isolation?
- Individuals or groups with special needs?

What are priority needs (for affected community and recovery operations)?

- Safety?
- Water, food?
- Psychological first aid?
- Emergency accommodation?
- Personal needs?
- Reuniting families?
- Material and financial?
- Transport?
- Health/medical?
- Communication?
- Information?
- Community meeting spaces and connectivity?
- Culturally specific needs?

Short to Medium Term

Conduct short- to medium-term needs assessment. What are evolving short- to medium-term needs?

- Psychosocial support?
- Temporary accommodation?
- Material and financial support?
- Health/medical?
- Communication?

- Information?
- Assistance with recovery processes (e.g. grants, insurance, clean up)?
- Community meeting spaces and connectivity?
- Culturally specific needs?

If required, implement outreach programs. Ensure that displaced persons are connected and able to re-engage with their 'home' communities. Provide psychosocial support mechanisms. Provide support and resources to enable people to access services, including interpreters to cater for cultural and linguistic diversity, resources for people with mobility, vision and hearing impairment, and for people with a cognitive disability. Consider the needs of tourists and persons from interstate and overseas. Ensure that planning and implementation of services and activities maintain an awareness of cultural implications for various groups. If established, coordinate the management and operation of recovery centres. Monitor and manage public health advice, safety and disease control.

Long Term (ongoing)

- Are food and water supply secured?
- Is safety and security adequate?
- Do all displaced persons have access to private, self-contained accommodation?
- Are personal health and clinical services restored?
- Are public health issues adequately managed?
- Ensure that persons with special needs have not been forgotten in planning processes.

Establish systems for ongoing psychological/emotional support for affected persons. Ensure the redevelopment of social networks and connections. Establish ongoing information provision.

3.6 Checklist for Emergency Response in Relation to Economic Environment

A vibrant local economy is a vital part of a sustainable community in the normal/routine environment, so in an emergency environment economic recovery is critical to the whole-of-community recovery process (Commonwealth of Australia, 2011). Economically, the physical damage (to lives, property, infrastructure, stores, livestock etc) following a disaster is often the most evident impact, but, increasingly, indirect and intangible economic impacts are being recognised and measured, and strategies are being implemented to reduce these impacts

where possible. Broadly, the range of economic effects and consequences on an affected community varies greatly and the use of checklist to approach recovery under economic environment becomes very necessary and important for the community.

Components

Each component may be directly or indirectly affected and the impacts might be tangible or intangible. Economic environment components include:

- Residents and households
- Public infrastructure, community facilities and the natural environment (essential services such as water and sanitation systems, electricity, gas, telecommunications and transport)
- Business enterprises and supply networks (retailers, distributors, transporters, storage facilities and suppliers that participate in the production and delivery of a particular product); other networks including peak bodies, not-for-profit sector, etc.
- Government.

Partners/Stakeholders

Partners/stakeholders in the economic environment include:

- Affected communities
- Local industry and business
- Industry bodies (e.g. chambers of commerce, farmers' federations, tourism associations, manufacturers)
- Government agencies (Attorney-General's Department, Centrelink, Australian Taxation Office)
- Local government
- Insurance Council
- Banking and finance operators
- Charitable organisations
- Others as required (dependent on emergency event and local needs).

Operational Activities

Immediate

What is the priority needs (for affected community and recovery operations)?

- Emergency cash grants?
- Access to banking and finance?
- Facilitation of insurance claims?
- Management of appeals donations?
- Information?
- Identification and support to businesses and employers?

Establish arrangements for collection and management of donated monies.

Short to Medium Term

What are evolving, short-term needs?

- Support with insurance claims?
- Access to employment?
- Renegotiation of loans?
- Assistance with grant applications?
- Support with rebuilding contracts?
- Support to small, medium business?

Restore banking and other financial services as soon as possible. Reopen businesses and restore community services. Establish arrangements for management and distribution of donated monies. Set up business assistance facilities as required. Assess employment issues. Establish a communications strategy to support local businesses to re-establish or remain open. Work with the insurance sector to ensure coordinated response by insurance companies and address adequacy of cover for reconstruction. Develop a fast-track insurance processing system and address insurance issues. Liaise with the recovery committee to develop a strategy to maximise use of local resources during reconstruction and establishment activities. Identify transport and information technology/communications needs and prioritise reconstruction activities to meet community business and manufacturing continuance requirements. Facilitate, where required, new mutual aid agreements between authorities and contracts with suppliers. Support small to medium enterprise (e.g. advice, referral to a business advisor, etc.). Re-establish retail/commercial facilities essential for community wellbeing or recovery activities. Manage resourcing and ensure supply chains.

Long Term (ongoing)

Identify opportunities to improve the local/regional economy and services during restoration.

- Are damaged or destroyed businesses still viable and appropriate to the community?
- Are there opportunities to upgrade business infrastructure?
- Are there opportunities to establish new businesses and services?
- Where possible, restore business and infrastructure to be sustainable and more resilient to future events.

Prioritise and secure supply chains. Re-establish commercial, retail and distribution infrastructure. Ensure the equitable, accurate and timely distribution of donated monies. Support the restoration of rural infrastructure. Reassess employment and livelihood issues. Explore need and opportunities for ongoing local business support network. Communicate planned actions to affected communities, recovery management team, stakeholder organisations.

3.7 Checklist for Emergency response in Relation to Natural Environment

Emergencies and disasters can have serious effects on the natural environment and on the ability of communities to function in the immediate and longer term. The impact on community includes economic functioning. These involve more emphasis on issues such as biodiversity protection, sustainable use of land and water resources, greenhouse gas emissions (including land use aspects) and pollution (Commonwealth of Australia, 2011). Interventions that may be necessary to enable recovery of the natural environment should be guided with the help of the checklist of recovery activities.

Components

Natural environment components include:

- Air
- Water
- Land and soil
- Plants and animals.

Partners/Stakeholders

Partners/stakeholders in the natural environment include:

- Affected communities
- Government agencies (parks, conservation and land management, stream management, environmental protection agencies)
- Local government

- Land care, 'Friends of' and environment groups
- Wildlife rescue services
- Catchment management authorities
- Others as required (dependent on emergency event and local needs).

Operational Activities

Immediate

Conduct risk management. Make an immediate impact assessment. What are priority needs for the natural environment?

- Containment of contaminants?
- Rescue of wildlife?
- Emergency erosion stabilisation?
- Emergency action for threatened species?
- Management of storm water runoff?
- Restoration of habitat?

Short to Medium Term

Ongoing risk management process with continuous monitoring
What are evolving short- to medium-term needs?

- Clean up of contaminants?
- Rehabilitation of damaged areas?
- Ongoing care and management of endangered species and injured wildlife?
- Response operations damage restoration?
- Ecological impact assessments?
- Management of ongoing erosion?
- Prevention of further contamination—weeds invasion, fungal disease from response/
- Recovery operations?
- Restoration of social amenity?
- Recovery of damaged natural resources?

Restoration of social amenity elements essential for community wellbeing.

Long Term (ongoing)

Identify opportunities to improve the natural environment during reinstatement.

- Are there opportunities to improve/upgrade amenity and/or ecosystems from previously degraded conditions?
- Are there opportunities to restore natural environment elements to be sustainable and more resilient to future events?

3.8 Checklist for Emergency Response in Relation to Evacuation Emergency Relief Centre

An evacuation centre also called *emergency relief centre,* is a facility that may be used to shelter people from the threat of a hazard. An emergency relief centre is a building or place established to provide essential needs to people affected by an emergency. Emergency relief centres are established on a temporary basis to cope with the immediate needs of those affected during the initial response to the emergency (Commonwealth of Australia, 2011). They do not imply any long-term use of facilities as a location for recovery services. They also provide emergency accommodation and in view of this, there is need to work with checklist to ensure that nothing is missed while working to provide affected person in emergency with essential needs in these areas listed below (Commonwealth of Australia, 2011).

Basic Life Needs

Basic life needs include:

- Sustenance-water and food
- Shelter
- Safety and security
- Information
- First aid
- Personal support
- Registration.

Location Considerations

These centres will have limited activation time and should be pre-determined and established. Location of pre-planned centres should consider likely hazards (flood, fire, hazardous materials etc), population, services, capacity and facilities.

Minimum Facility Requirements

- Accommodation-appropriate to population catchment.
- Access-to the centre, within the centre.

- Parking-appropriate to population.
- Communication-telephone (fixed and mobile), computer networks and internet, television and radio.
- Catering-kitchen facilities, fridges and freezers.
- Toilets and showers.
- Children's areas.
- Companion animal management.
- Management facilities-management, administration and staff rest areas.
- Security.

Possible Facility Equipment Requirements (Stored on Site or available at Short Notice)

- Bedding
- Tables and chairs
- Water and food
- First aid equipment
- Information boards-white boards, pin boards, flip charts etc.
- Signage-for centres and services
- Personal requisites for attendees
- Power boards and leads
- Emergency lighting
- Companion animal management equipment.

Possible Administration Equipment Requirements

- Keys and access codes
- Laptop computers with mobile connectivity
- Printers, photocopiers, fax machines
- Mobile/satellite telephones (and chargers)
- Contact lists
- Prepared administrative paperwork (e.g. operating guidelines, centre information handouts, log books, report forms, registration forms, staff roster forms, records of offers of assistance, records of requests for assistance, etc.)
- Staff roles and orientation information
- Data storage devices for computers with plans and templates
- Stationery supplies-pens, markers, tape, paper, note pads, staplers, hole punches, folders, display boards, pins, magnets
- Staff identification-vests, name/identification badges
- Maps

- Personal protective equipment and supplies (note: if stored on site or in kits, many of these items will need to be checked/replaced annually)
- Document security and management.

Management Considerations

- Traffic and parking management
- Welcome and orientation
- Security and safety
- Purchasing and petty cash management
- Cleaning and waste management
- Animal management
- Catering
- Special needs support
- Childcare support
- Staff management
- Volunteer support and management
- Management of donations and offers of support
- Communications with emergency coordination centre/recovery liaison/recovery management centre.

3.8.1 Checklist for Emergency Response in Relation to Managing People

In a disaster, staffs are employed for construction, logistics, housing, financial assistance, essential services repair, health and psychological wellbeing activities, and natural environment protection and restoration, and may be recruited on short-term contracts or seconded from the private or public sector for the duration of the emergency (Commonwealth of Australia, 2011). Managing recovery is dependent upon competent people who are willing to work in disrupted and non-ideal circumstances, often engaged in stressful duties. These people-the human resources-whether paid or voluntary, need to be supported and managed appropriately to ensure consistent and effective services are provided to the affected communities, often over an extended period of time. The use of checklist is most appropriate to make sure that nothing is missed in the areas listed below (Commonwealth of Australia, 2011).

Preparedness

Recovery operations will be most successful and the impact on staff will be minimised where staff involved:

- Have been involved in training and exercising

- Are operating in their normal area of expertise
- Have clear role statements and operating guidelines
- Have clear and supportive management.

Operations

For occupational health and safety:

- Consider appointing a safety manager
- Ensure safety issues are identified and managed and communicated
- Establish appropriate duty times
- Establish clear roles and responsibilities.

For staff involved in the emergency event:

- Consider the needs of staff personally affected by the emergency event.

Establish formal and informal arrangements for supporting the wellbeing of recovery staff, including:

- Operational briefing and defusing
- Mentoring
- Food, water and rest breaks
- Shorter than normal duty times
- Team meetings
- Manager briefings on likely impacts and staff needs
- Organisational employee assistance programmes
- Private counselling.

Briefing and Debriefing

Undertake briefing sessions for all oncoming staff and at regular intervals during recovery operations. Briefings should include:

- Overview of the nature and of the impact of the emergency
- Overview of recovery purpose and operations
- Detail of specific activities (relevant to the area of operations)
- Identification of persons in charge, organisations and people involved in the operations site
- The actions that have been taken to date
- The actions that are planned for the future
- The actions that are required in this shift period
- The resources that are available and not available

- Methods and timing of communications
- Staff arrangements (e.g. shift times, breaks, additional support etc)
- Time for questions.

Debriefing is important to:

- Ensure that information is gathered and passed on to oncoming staff
- Ensure that staffs going off duty have an opportunity to defuse and wind down before leaving the operations site.

Post-Recovery

Consideration should be given to:

- Allowing a reasonable rest break after conclusion of emergency involvement (days)
- Briefing managers and co-workers about likely staff impact and needs
- Reducing workload and expectations for a few weeks
- Backfilling and supporting roles
- Facilitating emergency staff get-togethers, recognition and 'thank you' events
- Facilitating and enabling ongoing emotional and psychological support.

3.9 Checklist for Emergency Response in Relation to Community Recovery Evaluation

Recovery activities assist the affected community towards management of its own recovery. They should be provided in a coordinated way to support disaster-affected communities in the restoration of their social, economic, and physical and environmental wellbeing (Commonwealth of Australia, 2011). The services provided depend on an assessment of the needs of the disaster-affected community and so will require a checklist to follow up the under listed areas (Commonwealth of Australia, 2011):-

- What is your evaluation for (i.e. its purpose—efficiency, effectiveness, appropriateness and/or process evaluation)? For example, it may be to inform ongoing and future interventions.
- What sources of feedback and documentation will you use to evaluate the delivery of community recovery services?

- What methods will you use (i.e. the general approach, formal and informal, quantitative/qualitative, longitudinal study, development of appropriate tools)? For example, will you use debriefs and questionnaires, surveys, data analysis, community involvement/ownership?
- What is the range of evaluations (i.e. the effects of the intervention/programme for individuals/groups/community conducted in conjunction with other services/interventions)?
- How will you keep evaluation process flexible to respond to the changing competencies of the community?
- What are the ethics considerations; Who conducts the evaluation? In a sensitive post-disaster environment when you conduct evaluation, who oversees it? Who makes decisions regarding the ethics questions?
- What objectives or principles are you measuring against?
- Evaluation tools should be in place at the outset (through databases).
- How independent is the evaluation process? Does it need to be independent?
- Ensure stakeholders are included (victims, emergency services, business communities, general community).
- What feedback will be appropriate for the communitytype, timing?

4.0 CONCLUSION

Checklists are often presented as lists with small checkboxes down the left hand side of the page. A small tick or checkmark is drawn in the box after the item has been completed. Checklists are used in every imaginable fieldfrom building inspections to complex medical surgeries. Using a checklist allows you to ensure you don't forget any important steps. Checklists need to be relevant to whatever you are checking, and detailed enough to enable you to do a thorough job. A checklist needs to be constructed as questions and clear steps, in some sort of logical sequence. The best way to do this is to work through all of the issues that are likely to be important and prepare a set of written comments about the product, task or environment. Out of these written comments you can prepare your checklist.

The power of a checklist is that you can take action on each item and ensure you are meeting the intent of that item. If your checklist items are too ambiguous or vague, you will tick the box, but will you have really completed it? According to www.nimonik.ca, saying things like "Check Safety Exits" is too vague, you should try breaking it into smaller items, such as "Check safety exits are clear of obstacles", "Check safety exit signs are illuminated", "Check safety exit doors open properly"… By

breaking down items into action, you make your checklist much more powerful.

Some checklists are just tick-boxes to be completed, but you can certainly have richer checklists that allow you to identify follow-up items. For each item, you can reply in the affirmative (yes), negative (no), not applicable (n/a) or mark as incomplete. You should also be sure to take notes that indicate what could be improved. If applicable, photos, video or audio evidence should augment your checklist findings. Lastly, you can always identify next steps for correcting any items you have had trouble with. And remember, a checklist should constantly be improved as you use it.

5.0 SUMMARY

In this unit, we have discussed t checklist and now know that checklist can be used in many ways such as in medical practice, in litigation including in emergencies. We have seen that in emergency response, checklist is important to undertake pre-event recovery planning for the purpose of recovery and the involvement of community at all stages. In the case of recovery management/operational, we noted that communities conduct their own spontaneous recovery, and this needs to be supported by a range of partnerships between government agencies, non-government organisations and the private sector. On checklist on emergency response in relation to social environment, we describe the impact of disaster upon people's personal and collective social wellbeing and need to use a checklist to ensure effective social recovery. On checklist for emergency response in relation to economic environment, we learnt that a vibrant local economy is a vital part of a sustainable community in the normal/routine environment. In an emergency environment, economic recovery is critical to the whole-of-community recovery process and economically, the physical damage to lives, property, infrastructure, stores, livestock etc following a disaster is often the most evident impact. Reconstruction needs to be followed up systematically by the use of a checklist. Emergencies and disasters can have serious effects on the natural environment and on the ability of communities to function in the immediate and longer term. Natural environment involve more emphasis on issues such as biodiversity protection, sustainable use of land and water resources, greenhouse gas emissions (including land use aspects) and pollution. Interventions that may be necessary to enable recovery of the natural environment should be guided with the help of the checklist of recovery activities. An evacuation centre also called *emergency relief centre,* is a facility that may be used to shelter people from the threat of a hazard and needs of such centre should be guided with the help of a checklist. An emergency relief centre is a building or place established to provide essential needs

to people affected by an emergency and provisions for such place must be systematic. In a disaster, staffs are employed for essential services and repairs, and their activities should be coordinated with the help of checklist. On community recovery evaluation, disaster-affected activities should be well evaluated by the use of checklist to ensure that restoration of their social, economic, and physical and environmental wellbeing are based on the services provided.

6.0 TUTOR-MARKED ASSIGNMENT

i. List the critical areas that will be considered in order to draw a checklist concerning pre-event recovery planning?
ii. Draw a checklist on emergency response in relation to social environment?

7.0 REFERENCES/FURTHER READING

http://en.wikipedia.org/wiki/Checklist#mw-head

World Health Organisation (1999).Community emergency preparedness: A manual for managers and policy-makers. WHO: Geneva.

Commonwealth of Australia (2011). Australian Emergency Management Handbook Series:Community Recovery Handbook 2. Ed. Australian emergency management institute, Barton, Australia.

http://www.nimonik.ca/2011/10/what-is-a-checklist.