8.

EMERGENCY OPERATIONS PLANNING

a. presentation

b. group discussions on review of existing plans

c. group discussions on development of new plans

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EMERGENCY OPERATIONS PLANNING FOR EC-COUNTRIES

by

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Yesterday, it was emphasized that a good disaster management programme comprises two basic kinds of action: prevention and preparedness. Vulnerability Analysis and Protective Measures are often associated with the first, planning with the second.

In the following table, an overview is given of the different phases of action to cope with disasters.

PHASE	ACTION	ACTIVITIES
Predisaster	Mitigation	Emergency occurrence reduction
		Emergency effects reduction
Predisaster	Preparedness	Planning
		Warning
Disaster occurence immediately post-disaster	Response	Immediate response
		re-establishment
Post-Disaster	Recovery	Short-term rehabilitation
		Long-term rehabilitation

Table 1: Disaster phases.

Today, we will focus on the planning process. Even in the imaginary situation, that all thinkable mitigation measures have been taken, a major disaster will still have a disruptive impact on the system. The response and recovery actions can only be undertaken effectively, when the planning has had proper attention.

Two levels of planning can be distinguished: strategic planning and operations planning.

Strategic planning refers to general approaches, responsibilities and methodologies to a disaster management programme at the level of the policy makers. For instance, in many regional or national disaster plans, guidelines are given for key departments, officials and agencies and responsibilities assigned. Inquiring about disaster plans for Environmental Services in Caribbean countries, I have very often heard very positive reactions: yes, we do have a disaster plan for our service. In most instances, it appeared that the persons were referring

to strategic guidelines, outlined in national or health sector plans. Examples: "the Water Department has the responsibility to restore the water supply as quickly as possible, starting with priority areas: the hospital, the emergency relief centres and police HQ "or" the Chief Medical Officer will ensure that proper sanitary conditions will be maintained in refugee camps".

These are examples of strategical planning, the distribution of roles among the available resources. They can be considered as guidelines, or as a mandate and a prerequisite, for the development of the next planning stage: the operational. Operational Planning starts from the mandate and defines tasks of specific staff members to implement the requirements of the mandate.

Examples of general lines in an operationally oriented plan for instance "as soon as a hurricane has passed, the Port Health Inspector will inspect the condition of the food, stored in the waterside warehouse" or "in case of a hurricane watch, the supervisors of the treatment plants will increase production to bring storage volumes to the maximum possible".

In other words: WHO does WHAT and WHEN.
Developing such a plan, only existing resources should be taken into account.

The actions outlined in the plan should be a balance of the necessity for clear task descriptions and the avoidance of too much detail. The plan needs to be concise to give quick guidance at the time of need and it should recognize that personnel must react to unpredictable emergency conditions and make on the spot-decisions. Since the most important kind of planning for you is the operational planning, let's have a look at the methodology to develop such an operational plan. In order not to get lost somewhere in the development process, it is again recommended to work systematically along a stepwise checklist.

The following steps could be distinguished for an Environemntal Health Emergency Operations Plan:

Step 1: <u>Identify organizational resources</u>

First: A responsible person or a small working group should be established for the development of the plan, the dissemination of it, updating and training. An advisory group may be assigned.

Second: This person or working group will inventory the available disaster staff, lines of command and their responsibilities. An alerting list with names and telephone numbers be made.

Third: Organizations/agencies are identified and contacted, which are related and are important for mutual aid purposes, such as the defense force, public works department, public utilities, health sector etc.

Step 2: Review of mandate

The national, regional or sector policy on disaster management should be reviewed in order to identify the role and responsibilities that have been assigned to your service or department. Legislation may be available. In some cases, such a policy will not exist yet, in most cases however, disaster plans are present and contain the information referred to.

Especially if these guidelines have been drafted by persons outside the department, review by the in-service person/group could reveal weaknesses and by modifying the guidelines a workable mandate can be formulated. This new or modified mandate will spell out the role and responsibilities of the service in times of disaster and has to be discussed with the national/sector (disaster) policy makers.

Step 3: Vulnerability Analysis

This step has already been given special emphasis in a previous lecture.

Based upon an inventory of all resources and a critical review of the operational capabilities in normal and disaster circumstances criticial components are identified.

Step 4: Specification of priority areas

Baseline environmental health levels after a disaster will be established. For water supply for instance: the minimum amount of water per person necessary for survival and basic sanitation. The quality should meet certain demands, which can be different from predisaster levels. Distribution does not necessarily have to take place via the piped system. In general, it can be emphasized, that past disaster service levels should not exceed predisaster levels.

After establishing these baseline levels, and the vulnerability and analysis priorities have to be determined. Water should be allocated to critical areas, sanitary attention to areas with high population densities.

Step 5: Inventory of Material Resources

An inventory should be made of all resources available: manpower. supplies, spares transport, communication and files. Multiple records should be stored for easy recovery, including description of availability of resources methods of operation and emergency procedures.

These records should be updated regularly. An 'ideal' list of emergency resources should be drafted and checked against the available resources. In general, certainly in developing countries, the available resources will show deficiencies.

This makes it of the utmost importance to allocate the existing resources before-hand to priority areas, as long as the deficiencies have not been eliminated.

Step 6: Co-ordination agreements

An emergency operation center should be identified, in order to establish a center of command. All means of communication have to be identified and lines of communication established. The co-ordinator of the Environmental Health/Water Supply Emergency Relief Operations will also relay information to his Ministry, the National Disaster Committee and mutual aid agencies These contacts should be initiated and formalized, including agreements on responsibilities, co-operation and communication lines to be used.

Step 7: Specification of emergency measures

A key element of any disaster planning is the determination of emergency-phase action steps, or: who does what and when. In step 6, it is envisaged to list the action to be taken during the warning period, during the disaster itself and after the disaster occurrence.

The longer the warning period, the more can be done to increase the readiness.

Readiness measures include:

- alert and assign personnel
- give abbreviated training of personnel
- check on location and availability of all man power materials, vehicles, equipment and supplies.
- increase the protection of personnel, structures and equipment.
- test communication lines.
- disseminate information to the public.

During the disaster protection of personnel (possibly allowed to go home), continuation of operations as limited by the circumstances and public information are the main areas of concern.

After the disaster personnel should know exactly what to do and where to go. Post disaster measures should be spelled out in the plan and the staff members thoroughly trained and briefed regularly.

Dependent on the size and organizational structure of the service, tasks will be assigned to specific individuals or divisions. Important actions are listed below for a water utility.

Action	Initiated by
- activation of disaster organization all personnel to report for duty.	Management
- mobilization of auxiliary disaster relief.	Management
- reconnaissance, damage assessment	Engineer
- determination of priorities as following from plan and actual circumstances.	Management
- cleaning and decontaminating.	Supervisors, Foremen
- organizing of repair crews	Supervisors, Foremen
- co-ordination of repair activities and operations.	Engineer
- resuming or continuing operations	Operators
- public information	Management.

For the Public Health department, most of the work will have to be done by the Public Health Inspector, working in the districts with often no limited communication with his superiors. Community participation is extremely important for him.

Step 8: Improving capabilities

If deficiencies are identified in Step 3, the capabilities of the service should be improved gradually.

Some examples are given below:

- increase the disaster resistence of structures
- increase stocks of materials, supplies and equipment
- improve communications facilities
- provide for auxiliary power sources and adequate fuel supply
- recruit and train auxiliary personnel: volunteers, retired staff, etc.
- update and upgrade the plan at least annually.

If you covered all these steps, what would your plan look like? To give you an idea, you will find a model plan outline attached.

FORMAT MODEL EMERGENCY PLAN FOR WATER UTILITIES AND ENVIRONMENTAL HEALTH SERVICES

PART 1: INTRODUCTION

.General

Information concerning the organization of the environmental health department/water utility; the types of disaster most probable in the area, a brief history of previous disasters or emergency situations.

.Scope

For water utility: description of system layout showing key points and indicating most vulnerable elements in the system and access to same.

For environmental health department: description of environmental health conditions and identification of the areas which are likely to pose the greatest post-disaster health hazards.

.Emergency Organization

Description in which way the environmental health/water utility emergency planning fits into the sector planning of the relevant government department (Ministry of Health/Public Utilities) and the national plan.

PART 2: CONTINGENCY RESPONSE SYSTEM

.Key Personnel

Listing of names, addresses, home and work telephone numbers and responsibilities of staff members.

For water utilities: management, engineers, superintendents, supervisors, transport officer, storekeeper, etc.

For environmental health department: chief, senior and district public health inspectors, pest control officers, port health officer, etc.

.Response Functionss

Action oriented description of activities in all disaster phases: warning, survey and damage assessment, emergency operations, cleaning and repair, documentation, liaison with related organizations, etc.

PART 3: FOLLOW-UP PROGRAMME

.Training

Organization of regular briefings, emergency drills, up-dating and up-grading procedures.

.Capability Increase

Planning for strengthening disaster preparedness.

APPENDICES

.Responsibilities, names, addresses and telephone numbers of staff members.

.Responsibilities, names, addresses and telephone numbers of mutual aid organizations (fire brigade, telephone and electricity departments, emergency committee, relevant government departments, etc.).

.Local contractors for equipment and support.

.Inventory of required and available supplies and equipment.

.Public information arrangements.

.Damage assessment forms.

.Emergency water purification procedures.

G R O U P D I S C U S S I O N S

EMERGENCY OPERATIONS PLANNING: GUIDELINES AND RESULTS

After an introductory course given by PAHO in 1982, some of the countries have started with the preparation of Emergency Plans, others have not. For today's group discussions, it is envisaged first to review what has been done in the countries represented in order, firstly, to evaluate and improve the existing plans and secondly, to get a feeling for what an emergency plan can look like. For thereafter, we will start to develop similar plans for those countries, which did not yet have had the opportunity to do so.

I. REVIEW OF EXISTING PLANS: GUIDELINES

Four groups will be formed to evaluate four plans here available:

Group 1: Emergency Action Plan of the Grenada Central Water Commission.

Group 2: Hurricane Plan of the St. Lucia Central Water Authority.

Group 3: Public health aspects of the National Health Disaster Preparedness Plan for St. Vincent and the Grenadines.

Group 4: Revised Environmental Health Operations Plan of the BVI.

It should be noted, that an emergency operations plan is also available for the Central Water and Sewerage Authority St. Vincent and the Grenadines, but we preferred to introduce the BVI Environmental Health Emergency Operations Plan instead to get even attention to the two main fields represented at the workshop: environmental health and water supply.

However, it is hoped that the St. Vincentian participants will review the CWASA plan after the workshop in a similar way.

IMPORTANT: EACH GROUP WILL ASSIGN ONE RAPPORTEUR.

The rapporteur will make a comprehensive resumé of the results of the discussion, which will be presented to the secretary for typing and consequent inclusion in the workshop report.

ASSIGNMENT:

LIST: ADDITIONS/MODIFICATIONS THAT WILL IMPROVE THE PLAN

TIME: 1 hour + 10 minutes presentation by each group.

ST.LUCIA ENVIRONMENTAL HEALTH

System: Environmental Health

Assumed Disaster: Hurricane

Policy: To ensure and maintain a satisfactory level of sanitation.

Objectives:

1. To ensure that householders dispose of their solid waste in a satisfactory manner.
2. To ensure proper excreta disposal in the community.
3. To control insecrs and pests.
4. To ensure safe drinking water
5. To ensure that foods offered for sale are fit for human consumption.
6. To investigate communicable diseases and take necessary measures to prevent the spread.
7. To intertake all other activities would enhance public health and safety.

TABLE I : VULNERABILITY ANALYSIS WORKSHEET

SYSTEM: ENVIRONMENTAL HEALTH — ASSUMED DISASTER: HURRICANE

ANALYSTS: Eldridge Poyotte, Ava Auguste, Marcel Fevriere, Errol Frederick, Kenny Raymond, Reney Biscombe — DATE: 21-11-84

COMPONENTS:	EFFECTS ON COMPONEBTS
Insect and Vector control	Increase demand on resources e.g. insecticide, manpower and equipment for control of insect and vector.
Solid waste disposal	Greater need for collection and final disposal
Food Hygiene	Greater demand and inability to cope with food inspection. Inability will be creared when a greater amount of food stuff will be sent in by overseas agents. Education of food hygiene will be disregarded e.g. denied and unlabled cans of food stuff will be consumed
Excreta disposal	Greater demand for manpower to control excreta contamination e.g. water supply and general surroundings.
Sanitation	Increase in the number of dead animals and the blockage of drains.
Education	Complete disregard for all educational information and teachings.

TABLE II: VULNERABILITY ANALYSIS CRITICAL AREAS

CRITICAL AREAS	CORRECTIVE MEASURES
Education	There should be educational sections for personnel responsible for different communities, which have a direct bearing on environmental health, to ensure that correct procedures are implemented when the need arises. A system of public information should be established
Food section	The health section should be involved in all areas of food handling and distribution.
Control of insects and vector	Ensure that a reasonable supply of material and equipment is readily available in different secured areas.
Solid waste disposal	Refer to (1) There should be a community mobilization effect geared towards community involvement in disposal of solid waste.
Monitoring of water supply	Provide sampling kit in all areas where there is catchment area. Improve communication with water authority representatives.

GRENADA

Assumed disaster - Hurricane

Main Components

1. Reservoirs
2. Wells (Bore holes)

Geographic location of Reservoirs Catchments

1. Mardigras
2. Vendome
3. Annandale
4. Les Avocats

Critical areas

Intake Structures.

Past Disaster

1. 1973 - Gastro outbreak (Vendome Treat Plant)
2. 1980 - Hurricane Allen - damage to roads, landslides, bananas, foodcrops. leading to breaks in pipelines

GRENADA

COMPONENTS

A. RESERVOIRS AND CATCHMENTS

	% Supply to areas
1. Annandale	45%
2. Vendome	18%
3. Les Avocats	6%
4. Mardigras	5%

D. WELLS (Bore hold)

1. Tempe	6%
2. Chemin Valley	8%
3. Woodlands (2)	6% - 6%

C. STORAGE(RESERVOIRS)

1. Observatory
2. Richmond Hill
3. Woburn
4. Jean Anglais (Belmont)

B. TREATMENT PLANTS

1. Vendome
2. Annandale
3. Mardigras

Expected impact on components by disaster.

1. Siltation of Dam

2. Fesal contamination of catchments

3. Disruption of surface line due to slides and damage to dam structures

4. Power cut and damage to stand-by generators.

Changes in Service Demand

Present product level - 3M gallons per day, therefore there is need for increase demand for water in quantity of 1.5M gallons.

GRENADA

NON - STRUCTURAL COMPONENTS

1. Man - Power Resources
2. Equipment:
   (a) Construction
   (b) Communication
   (c) Maintenance
   (d) Transportation

CRITICAL AND VULNERABLE COMPONENTS

Main areas of concern:-

1. Annandale intake structures from dam.
2. Annandale treatment plant
3. Vendome treatment plant
4. Bore-hole wells in South of the island.

TABLE I : VULNERABILITY ANALYSIS WORKSHEET

SYSTEM: Greater St.George's Area — ASSUMED DISASTER: Hurricane

ANALYSTS: BUBB, EDWARDS, SMITH, TROTMAN WORME.(GRENADA) — DATE: 21st November,1984

COMPONENTS:	EFFECTS ON COMPONENTS
A. RESEVOIR & CATCHMENTS	
1. Annandale	Siltation of Dam
2. Vendome	Fesal contamination of catchments
3. Les Avocat	Disruption of surface lines due to slides
4. Mardigras	Power failure and damage to stand-by generators
B. TREATMENT PLANTS	
1. Vendome	Inadequate capacity to handle decrease in water quality, e.g. Turbidity control
2. Annandale	Damage to mechanize treatment components of the plant
C. STORAGE (RESEVOIRS)	
1. Observatory	
2. Richmond Hill	
3. Woburn	Structural damage to civil structures
4. Jean Anglais.	
D. WELLS	
1. Tempe	Disruption of power supply
2. Chemin Valley	
3. Woodlands (2)	
E. EQUIPMENT	
. Transportation	

TABLE II: VULNERABILITY ANALYSIS CRITICAL AREAS

CRITICAL AREAS	CORRECTIVE MEASURES
1. Annandale intake structures from Dam	Elaborate civil engineering project e.g. Building of flood-gates, widening etc. reforestation of catchment area
2. Annandale treatment plant	Storage of adequate components of spare-parts
3. Vendome treatment plant	
4. Bore-hole wells in South	
5. Transportation - lack of adequate number of vehicles	Increase transportation inputs such as obtaining additional venicles Managerial restructuring.

Country: Roseau, Dominica

Date: 21. 11. 84

Assignment: Vulnerability Analysis related to the Water Supply

Step 1. PAST DISASTERS

1977	Bagetelle Disaster	12 persons died
1979	Hurricane David	40 persons died
1980	Hurricane Allen	
1981	Flash Floods	(affected water supply)
1984	Rain storm	

Policy and Objective: To provide safe water in adequate supply to the populace

Weaknesses of System in Normal Times:

- shortages
- Turbidity
- leaks

Step 4. Estimate Service Demands: Increase in demand by 40% for cleaning and sanitation purposes

TABLE I : VULNERABILITY ANALYSIS WORKSHEET

SYSTEM: WATER (ROSEAU, DOMINICA) ASSUMED DISASTER: RAINSTORM

ANALYSTS: Messrs SCOTLAND, ANSELM, THOMAS, ISRAEL, CARBON. DATE: 21.11.84

COMPONENTS: (2)	EFFECTS ON COMPONENTS (3)
1. INTAKE (WAI) (97%) (Snug corner) 3%	Sitting and a possibility of undermining and being destroyed; contamination.
2. Supply Main	Being washed away by river, damaged by landslide.
3. Treatment Plant	Turbidity due to the fact that retention is not enough
4. Reservoirs (10)	Vulnerable Reservoirs (a) Emshall could be damaged by landslides (b) Madrelle - damage by fallen trees
5. Mains	Washing away by rivers, damage by landslikes, contamination
6. Distribution Mains	Breakages, leaks due to old age, contamination low pressure
7. Tools and equipments(fittings)	Inadequate supplies
8. Management	Porr technical know how and inefficiency
9. Service	Shortages, nonpotable water
11. Communication	Lack of telephones, road blocks and Walkie Talkies.

TABLE II : VULNERABILITY ANALYSIS CRITICAL AREAS

CRITICAL AREAS	CORRECTIVE MEASURES
(5)	(6)
1. INTAKE	(a) Increasing the number of intakes (b) Better design eg. protection from storm rum-offs (c) Change of site
2. Supply Mains	(a) Relocating mains (b) Bridge crossing for mains
3. Distribution System	Change aging pipes
4. Tools and equipments (fittings)	(a) Stock-pile more modern equipments and tools in adequate supplies (b) Tools and equipments at strategic points (c) Frequent servicing of stock
5. Management and Service	Improve technical know-how by- (a) inservice and refresher courses (b) rotation of staff

REVIEW EXISTING PLANS: RESULTS

Group 1: Review of the Grenada CWC Plan

Group 1 reviewed the emergency plan of the Grenada CWC (see annex c) following the stepwise approach outlined in the presentation and came up with the following recommendations:

Step 1: identify organizational resources

* assign responsible person/working group for disaster preparedness
* add telephone numbers and functions of personnel
* add information on mutual aid agencies, like fire, police, public works, health

Step 2: review mandate

* include reference to national plan/formulate basic task of the service

Step 3: vulnerability analysis

* assess the vulnerability of the system and focus plan on weak components

Step 4: specify priority areas

* include priority areas

Step 5: co-ordination agreements

* mention emergency operation center
* describe means of communications

Step 6: inventory material resources

* add type of equipment (specifications) and location

Step 7: specification of emergency measures

* systematize emergency measures: who does what and when

Note: the group found that a basic methodic approach was missing. The plan needs a full rewriting. The format of the plan of the St. Lucia collegues is suggested.

Group 2: Review of the St. Lucia CWA Hurricane Plan

The group formulated the following recommendations

* update the plan annually (old telephone numbers were identified; step 1)

* add information on organizations to laise with (step 1)

* add priority areas (based upon vulnerability analysis, steps 3 and 4)

* the operations manager will be overloaded with tasks: indicate possibilities for delegation (step 7)

* give rota officer the power to determine who should stay on the service or who goes home after a hurricane warning.

* mid-day arrangements for local truck and tank hire are made: firm these up during a hurricane watch period

* give consideration to support services

Group 3: Review of the Public Health aspects of the draft National Health Disaster Preparedness Plan of St. Vincent & the Grenadines

The third group studied the St. Vincent Health Plan. The main recommendations:

* systematize the responsibilities: presently the tasks of a specific official are scattered through the plan

* reformulate /specify emergency measures, taking into account the difference between strategic and operational plans (policies general roles against specific activities; eliminate words such as "proper" and "should")

* specify the lines of communications

* include a (loose leaf) list of available resources

Notel: the environmental health representative from St. Vincent informed the group that a revised draft of the plan had been developed recently, which accomodates the recommendations made to a certain extend.

Note 2: the revised plan has among its features pre-prepared damage assessment and post-disaster surveillance forms

Group 4: Review of the B.V.I. Environmental Health Emergency Operations Plan

In the absence of examples of EH disaster plans from the represented countries, group 4 reviewed the comprehensive B.V.I. plan. Recommendations:

* add information on committees, organizations, agencies essential to facilitate the emergency operations

* add alternates for the event those staff members listed are unavailable

* elaborate on communication/transport lines between the islands

* specify throughout the plan WHO is responsible for WHAT

* inventory and list location and type of all available equipment

NO	STEP	ASSIGNMENT	TIME
1.	IDENTIFY ORGANIZATIONAL RESOURCES*	a. List all organizations/departments with whom you will relate during/after a disaster (to be an annex to the plan) b. Prepare a table of names, telephone numbers, addresses and designation of all staff (to be an annex to the plan)	15 minutes (after the workshop)
2.	REVIEW/FORMUCATION OF MANDATE*	a. When reference is made in the national/sector plan to your service, review this and if appropriate, suggest improvements. b. If no reference is made to your service, formulate in a concise way (not more than 5-10 sentences) the main responsibilities of your service after a disaster.	30 minutes
3.	VULNERABILITY ANALYSIS	- (done previous day)	-
4.	SPECIFY PRIORITY AREAS*	a. Identify areas, which have priority after a disaster.	15 minutes
5.	INVENTORY MATERIAL RESOURCES	(a. List location, type and amount of all material resources available).	(after the workshop)
6.	CO-ORDINATION AGREEMENTS*	a. Locate emergency operations center b. Describe means of communications	15 minutes

NO	STEP	ASSIGNMENT	TIME
7.	SPECIFICATION OF EMERGENCY MEASURES*	a. Describe who should do what during a disaster warning period.	30 minutes
		b. Describe who should do what in the aftermath of a disaster	1 hour
8.	IMPROVING CAPABILITIES	a. Recommend measures to eliminate vulnerable and critical components.	when time permits

c. Group Discussions

II. DEVELOPMENT OF OUTLINE OF SPECIFIC EMERGENCY OPERATIONS PLANS : GUIDELINES

The four groups will work on the preparation of plans, that are still to be developed:

Group 1: Environmental Health Emergency Plan Grenada

Group 2: Emergency Operations Plan Dominica Central Water Authority

Group 3: Environmental Helath Emergency Plan Dominica

Group 4: Environmental Health Emergency Plan St. Lucia

Participants, representing one of these areas, should of course be a member of the group developing the outline of their own emergency plan.

In the following table the same steps are listed as discussed in the presentation. It is not the intention to have fully developed emergency plans at the end of this afternoon, but you should try to finilize a format, that can easily be elaborated back at the office. We have 2 hours 45 minutes to our disposal. In the third column 5 assignments are listed that you have to work on today. In the fourth column we indicated a time frame. This time indication shows, that the main point of your effort should lie on step 7: specification of emergency measures. The other assignments should essentially lead to plan - annexes.

Do not forget to assign a rapporteur!

DEVELOPMENT OF EMERGENCY OPERATIONS PLANS: RESULTS

Note: the format of an environmental health emergency operations plan for an Eastern Caribbean country depends on the organizational structure. In a country such as Dominica (to a lesser extend also Grenada) the Environmental Health Officer is a member of a local health team and reports to the leader of this team rather than to the CEHC in the capital. In this case the functions of the EHO should be spelled out in an emergency plan for this health team. In other cases, the environmental health department forms a more separated unit, for which a distinct EH plan can be developed, which can be considered as a part of the total health plan and can merely be attached to this plan.

Group 1: Development format (Environmental) Health Emergency Operations Plan for Grenada

Step 1 Identify organizational resources

List should include the following organizational resources:

a. Health Personnel
- public health department
- community nursing
- health education
- medical stores
- hostipal: lab/X-ray
- family planning
- food and nutrition
- pharmacist
- national housing authority

b. Non-Health
- central water commission
- police and fire
- communication and works
- Ministry of Education
- community development
- service clubs
- Chamber of Commerce
- church/church groups
- Port Authority
- telephone/electricity
- Ministry of Information
- voluntary organizations

In the absence of a sectoral emergency plan for the Grenada Health Ministry, the group also pondered on the establishment and composition of emergency health committees at the National and district level.

At the National level a Central Co-ordinator Committee would be established, comprising: the P.S. Health (chair person), C.M.O., M.O.H., CEHO, C.N.O., Chief Community Nurse, Hospital Matron, Hospital Administrator, Chief Lab Technician, Chief Pharmacist, Chief Health Education Officer, Chief of Medical Stores and a Nutrition representative. District team members would be: D.M.O., P.H.N., F.N.P., E.H.O., Health assistants, Community Health Aids, Pharmacist, Caretakers, Revenue officer, member of Teacher's Union, C.W.C. representative, Matron and Steward (if hospital in district) agricultural representative.

The workshop co-ordinators advised the group to limit the size of the committees to a core of executive officers, whilst establishing proper communication links.

Step 4: Specify Priority Areas

According to the group EH priority areas were:

1. liquid waste disposal (St. George s)
2. solid waste disposal (St. George's)
3. food hygiene
4. water supply

Step 6: Co-ordination Agreements

The Emergency Operations Center for health emergency response would be Marina Villa (St. George's) or as alternative the Ministry of Construction (St. George's). At the level health centres or police stations district would serve as e.o.c.'s. These points were selected because of the communications facilities.

Means of Communication would be: radios (including HAM radios and walkietalkies), helicopters and coast guard vessels (all to be specified later)

Lines of communication/command should be listed in the specification of emergency measures (step 7)

Step 7: Specification of Emergency Measures

Although the group experienced some time shortage, the following emergency measures were suggested:

a. Warning Period

1. CEHO will call a meeting with his Senior EHO'S and explain their roles and responsibilities

2. Senior EHO'S will call a meeting of his district EHO'S

3. District EHO'S - will check on existing stores/materials
   - will relate with health assistents and co-operate in district health team

b. Post-disaster Period

The District EHO will:

- inspect the existing water supplies

- inspect food supplies
- direct proper disposal of dead - if any
- supervise, inspect and direct health facilities of evacuation camps/centers
    1. food preparation
    2. solid/liquid waste disposal (mobilize workers)
    3. insect/vector control
    4. water supply
- survey damage, rescue of injured, call or get in contact with ambulance/hospital
- report on status in health district and identify needs of the district:
    1. report to Sr. EHO
    2. Sr. EHO to report to C.T.O. about the conditions and needs at zonal level
    3. C.T.O. to report to M.O.H. and implement the required needs at the district levels.

Note co-ordinator: the emergency measures (step 7) should be based on established priorities (step 4), which again should be based on the results of the vulnerability analysis (step 3)

DOMINICA CENTRAL WATER AUTHORITY

DISASTER PLAN

	By 30th June	Whole Gale Warning	Hurricane Warning	Immediately After a Hurricane
SUPERVISORS	(1) Check security of all structures: Windows: Doors: Roof: Shutter: Hooks: Latches: Galvanized sheeting Report and make necessary repairs	Make certain all sites are protected and secure	Recheck security	Check all sites and report conditions to Engineers & Managers
	(2)Check emergency stocks. Nails, hammer, wire, rope, pliars, flash lamp, hurricane lamp, kerosene, first aid kits, cutlasses & files	Liaise with Manager for latest information and give location	Collect perishable food stocks from main stores or purchase locally.	All men report to nearest water works site to home as soon as possible.
	Throughout the season maintain good diesel and lubricating oil stocks		Move vehicles to strategic points: Head office: Treatment Plants, Report positions Superintendent of Operations	
OPERATION SUPERINTENDENT	Check Storage water tanks and keep record of levels	Check 1 & 2 above with supervisors	Either remain at head Office or in Radio/ Telephone contact	Take action to restore supplies: ration available water according to priority list. Liaise with secretary/Manager & Emergency centre
	Make arrangements for local truck & tank hire.	Fill all storage reservoirs ensure mobile tanks are sterilize and ready for use		
		Procure local hire arrangements		

	By 30th June	Whole Gale Warning	Hurricane Warning	Immediately after a hurricane
CHIEF MECHANIC	Maintain high levels of diesel stocks at all generator sites and vehicle fuel stocks at head office	Know location of all vehicles and ensure vehicles at head office with radios are sheltered where possible	Confirm. of whole gale warning: Arrangement vehicle safety	Assist as required
STOREKEEPER	Check emergency stores as for Superintendent	Stand-by	Stand-by	Issue stores as required for remedial work.
LABORATORY TECHNICIAN	Ensure that chemicals stocks at works are never less than two month supplies	Check water quality with Supervisors.	Stand-by	Monitor water island wide if possible. Visit and check all Treatment Plants as soon as possible liaise with Public Health Department
ENGINEER & ENGINEER ASST.		Report to Manager	Liaise with Supervisors & Manager	Survey damage done and recommend

IMPROVING CAPABILITIES - Recommended measures to eliminate vulnerable and critical components will be done back home, as we realize that there's much to be done.

Group 2: Development of format Emergency Operations Plan Dominica Central Water Authority

Step 1: identify organizational resources

a. persons who should be involved in the development of the plan: manager, superintendent of operations, storekeepers, engineer, lab technician/ water quality supervisor, secretary, accountant, supervisors, foremen, chief mechanic

b. key contact departments would be: Fire Department, Communications and Works, Public Health, National Emergency Organization, Police Service

Step 4: priority areas

1. reinstate water supply to the cities of Roseau and Portsmouth

2. reinstate supplies to major villages: St. Joseph, Woodford Hill, Wesley, Marigot, Grand Bay, Castle Bruce

3. supply chlorine to rural areas

Step 6: co-ordination agreements

a. emergency operations centers: CWA in Roseau and Portsmouth

b. means of communication: roads, police, tele-communication system, ham radios, National Emergency Communication System (to be specified!)

Step 7: Specification of emergency measures

Because of the similarity between the water systems of Dominica and St. Lucia it was suggested to use the St. Lucia CWA plan as a format and adapt it to the Dominica situation (see tables).

In addition to the tabled information the manager has the responsibility to call a meeting of the authority's emergency committee while notices should be sent out by radio during a hurricane warning period to the consumers on safety precautions in use of water through the secretary

Note co-ordinator: the emergency measures should be based on established priorities (step 4), which again should be based on the results of the vulnerability analysis (step 3). While using an existing plan (St. Lucia) this should not mean: copying it. Therefore the weaknesses of the example should get careful attention.

Group 3: Development format Environmental Health Emergency Operations Plan for Dominica

Past disasters:

"The types of disasters which most frequently strike this vulnerable island are Hurricanes and Rain storms. In 1977 due to heavy rain we had the Bagatelle disaster in which twelve persons were buried alive under a landslide. In 1979 Hurricane David left forty deaths. In 1980 this island was again hit by Hurricane Allen. In 1981 and 1982 heavy rains left many roads blocked. A Rain storm in 1984 left one man dead and many villages cut off from communication".

Step 1: inventory of organizational resources

a. EH staff at district level:

The E.H. Department of Dominica forms an integral component of The Ministry of Health. The Health Services is divided into seven Health Districts with Environmental Health Personnel stationed in each district. These E.H.O.'s work on a health team basis at district level although they are still in contact with the Environmental Health Department.

Distribution is as follows:-

Health District	No. of E.H.O.'s
La Plaine	1
Castle Bruce	1
Marigot	2
Portsmouth	2
St. Joseph	1
Roseau	10
Grand Bay	1

There is currently a vector control project which employs two squad leaders and sixteen field workers. There are approximately twenty sanitary labourere for cleaning of the island except Roseau for whose sanitation E.H. is not responsible.

b. organizations to liase with

1. Police Department
2. Fire service
3. Public Works
4. Central Water Authority
5. Government Information Service
6. Local Government
7. Red Cross
8. Christian Council
9. Roseau City Council

Step 4: Specify priority areas

1. Food Hygiene

(a) Quality control
(b) Educate

2. Vector Control

(a) Breeding sites (source reduction)
(b) Use of chemical

3. Water

(a) Ascertain quality
(b) Educate

4. Solid Waste

(a) Organize collection and disposal of garbage
(b) Collection and burial of human and animal dead

5. Personal Hygiene/Housing

(a) In respect to communicable disease

Shelters

(a) Determine the suitability of the shelter
(b) Monitor standard of shelter

6. Excreta Disposal

(a) Location
(b) Well design

Step 6: Co-ordination Agreements

a. Emergency Operations Center:

at central level: EH Department P.H.C.C.
at district level: Health Center or Police Station

b. means of communication:

telephone if in operation, hand radio sets

Step 7: Emergency Measures

A first draft of the emergency draft operations is attached in a tabled form. Further elaboration is needed.

SPECIFICATION OF EMERGENCY MEASURES

PERSONNEL	PRE DISASTER	IMMEDIATE PRE-DISASTER	IMMEDIATE POST DISASTER	REHABILITATION
Chief E.H.O.	1. Review disaster plan together with E.H.O and update	1. Continue liasing with M.O.H. and National Emergency C'tee	1. Co-ordination Emergency Operation with S.E.H.O and District E.H.O.	
	2. Ensure that equipment needed for disaster are handed to district.	2. Give instructions to seniors (S.E.H.O.)	2. Assign S.E.H.O. to priority areas	
	3. Liase with M.O.H.	3. Give public information	3. Continue giving public information	
SENIOR E.H.O. with specific roles	1. Ensure that they have a sufficient amount of equipment in stock	1. Liase with C.E.H.O. 2. Alert District E.H.O. to be on staddby	Co-ordinate with District E.H.O.	
DISTRICT E.H.O.	1. Ensure suitability of Emergency shelters in his/her district. 2. Familiarize himself with the roles and responsibilities of other Health Team members. 3. Obtain supply of equipment needed in case of a disaster	Stand by and be on the alert	1. Report for duty 2. Carry out thorough survey and report to S.E.H.O. 3. Take immediate action as result of survey.	

Group 4: Development format Environmental Health Emergency Operations Plan for St. Lucia

Step 1: inventory of organizational resources

Organizations to liase with.

a. During/After Disaster
   - Health Committee at National level
   - Water Authority
   - Electricity Department
   - Cable & Wireless
   - Communication & Work
   - Fire Department
   - Police Department
   - City Council

b. After Disaster
   - Urban and Rural Health Committee
   - Emergency Relief Shelters
   - Urban & Rural Water Authority representatives

Step 4: Specify priority areas

Areas with priority after a disaster
- Survey to determine the status of the environment
- Solid and liquid waste disposal
- Excreta disposal
- Water supply and storage
- Insect and Vector control
- Food storage, handling and distribution
- Personal hygiene
- Epidemiology

Note co-ordinator: base definite priority list on results vulnerability analysis

Step 6: Co-ordination Agreements

a. Location of Emergency operation centre
   - Central Headquarters (Castries Health Centre)

b. Means of Communication (to be specified later)
   - Battery operated equipments
   - Ham radios
   - C.B.'s
   - Messages
   - Telephones
   - Vehicles (heavy duty, land rovers, four wheel drive, motor cycles)
   - Sea transport

Step 7: Emergency Measures

Who should do what during a Disaster Warning Period

- C.M.O. or representative	Inform CPMI and public at large
- G.P.H.I.	Contact all officers and employees of the Health Department
- P.H.I.	Get vehicles prepared
	Insure stocks are available
	Insure key to storeroom is available and secured
	Test equipment

Who should do what in the aftermath of a disaster

- C.P.H.I. under the direction of M.O.H.	Overall responsibility of environmental health emergency operation
	Liaison between S.P.H.I. and M.O.H.
	Assist M.O.H. in selecting site for mass burial of human beings and animals.
- S.P.H.I.	Survey the environment
	Co-ordinate activities with districts and relate to C.P.H.I.

- P.H.I.	Responsible for sanitation of critical areas - control of insect and vector - disposal of solid and liquid waste - disposal of excreta - purification of water - alert water authority representative - inspect the storage, distribution and fitness of food - overall inspection at shelters
- E.H.O.	Assist P.H.I. as directed

Closing remarks group exercise emergency operations planning:

1. elaborate working results and add steps 2,3,5
2. eliminate generalities and specify resources/tasks
3. use the results of the vulnerability analysis while listing priorities and specifying emergency measures