ENVIRONMENTAL HEALTH MANAGEMENT IN EMERGENCIES

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1. INTRODUCTION

As a consequence of a natural disaster of break-down in man-made installation, a situation arises in which normal local or national relief resources and services may not be adequate and national or international resources must be called upon to cope with the situation. This situation is an emergency [1].

An immediate result of a disaster is the disruption of normal ways of living and the exposure of the afflicted population to faulty and hazardous elements in the environment. Under the conditions of panic and chaos which prevail in the aftermath of a disaster, efficient management of available resources for rescue and relief is of utmost importance. The responsibility of health authority is to protect the health of disaster stricken people. Since health protection cannot be effective without provision of a healthful environment, it is clear that one of the primary needs in disaster relief operations is to take environmental health measures which lend themselves to prevailing circumstances and available resources. The purpose of this paper is to highlight some of the managerial aspects of environmental health in emergencies.

2. MANAGEMENT

An American philosopher some years ago called our epoch that of "Managerial Revolution" [2]. The events of the world after the Second World War have proved that harvesting the fruits of resources (including human) and technology is vitally dependant on the skills of management. This saying becomes more significant in emergencies.

It is appropriate, at the outset, to ask: what is management? Putting it into broad general terms, "management is concerned with seeing that the job gets done, and done efficiently" [3]. This definition appears simple but more thorough investigation and experience show how complex it is. Management is a process the elements of which are:

Planning - to prepare the necessary information and interpret it into programmes; to establish organization, layout, methods, instructions, etc., thus to provide basis for a decision leading to action.

Command - to initiate action by communicating a decision, to keep it in progress, and to supervise performance, while ensuring a high level of cooperative participation as the outcome of good morale.

Coordination - to keep all activities in balance and in suitable combination.

Control - to review results, to record as necessary, to judge performance and cost, and to feed back as the guide to planning and/or command (=decision) [3].

3. PLANNING

Preparedness is the key factor in responding rapidly and effectively to emergency situations created by any type of disaster. The prerequisite for preparedness is planning. It is not difficult to foresee the type and severity of emergencies. Some countries are located on earthquake belts; some coastal regions are exposed to recurrent cyclones, hurricanes and typhoons; active volcanos, flooding rivers and tidal waves are known; and some other types such as avalanches, landslides, cold spells, heatwaves, explosions and fires are foreseeable. Past records in each country help to forecast emergencies and plan accordingly.

Pre-disaster planning is in fact the preparation in advance by the government of a relief plan. It defines the responsibilities entrusted to each of the bodies in relief operations: civil defence, the Red Cross, army, police, public services, etc. Responsibilities are distributed according to the individual character, the specialized field and personnel and material resources of each agency. Provisions should also be made in the plan for the effective coordination of the delegated activities.

The national relief body should draw up an operation plan for a general type of emergency, since the exact details of the emergency to be faced are usually unknown. Full knowledge of this plan and the basic concepts of operation is essential to the conduct of activities during an emergency; it enables the responsible officers to carry out coordinated work towards a common objective without delay and overlapping. The scope of the plan depends on the emergencies expected, the number of people at risk, the extent of the affected area, and the frequency of emergencies.

The operation plan should define (a) objectives; (b) command and control structure; (c) limits of authority and responsibility; (d) duties and lines of communication; (e) channels for requesting and supplying additional resources; and (f) details of operation.

Each service involved in relief operations, including environmental health service, should develop its own operation plan based on the general principles already described. The operation plan for emergency environmental health should include:

(a) effective liaison with other health departments and the relief organizations;

(b) inspection, identification, and evaluation of environmental health problems;

(c) immediate mobilization of personnel and equipment;

(d) emergency action to control or eliminate environmental health hazards;

(e) emergency operation of water supply, waste disposal services, etc.;

(f) evaluation of damage to public sanitation facilities and provision of advice or remedial measures;

(g) report on conditions and on measures applied.

In organizing environmental health operations, two important points should be taken into consideration:

(i) Span of control: efficient supervision and control at all levels can be exerted when the labour force is grouped in small teams of 5-7 persons under a supervisor.

(ii) Operational area: each team or operational unit should serve in a specified area.

4. PERSONNEL

Type of personnel:

Professional public health engineers are needed at policy-making levels, for technical services, surveys, over-all planning and supervision. Professional sanitarians are needed to assist engineers in making surveys, in the control of water quality, food safety and waste disposal installations; and in vermin control, supervision of the work of auxiliary sanitation personnel, etc. Auxiliary sanitation personnel are needed to look after sanitary facilities, food safety, vermin control operations, disinfection, supervision of workers and volunteers, health education, etc. These auxiliaries should have received formal education in the main aspects of environmental sanitation, since they will have to carry out the bulk of field work. If the emergency is too extensive and the number of professional environmental health workers is not adequate, the manpower may be supplemented by sanitarians working in industry, consulting civil and sanitary engineers, railway and airline sanitation personnel, water company personnel, pest control operators, teaching staff of universities and institutes in the fields of sanitary sciences and public health engineering. These individuals should receive orientation instructions and work under professional environmental health workers.

4.1. Training

It is necessary to organize courses and exercises in emergency field work from time to time. Fighting against the consequences of a disaster can be compared with a war: preparation and peacetime manoeuvres are necessary to keep personnel ready to face emergency situations. Simulation exercises help evaluating degree of preparedness, recognize weak areas in the structure and procedures, and to take remedial measures.

In addition, some sanitarians may receive specialized training in vermin control, disposal of wastes, mortuary service, food safety in mass feeding centres, field hospital sanitation, and similar subjects. The training courses for emergency action must be of practical nature, with minimum theoretical work. Demonstrations and exercises should be arranged so as deftness is achieved in the use of equipment and supplies stockpiled for emergencies.

A detailed manual of environmental health procedures in emergencies, designed to meet local needs and to make the best use of local resources and facilities, will be of great assistance in the training of personnel.

4.2. Use of volunteers

It is useful to train young members of welfare societies (e.g. Junior Red Cross), scouts, and members of mountaineering and sports clubs in emergency

sanitation. Volunteers may also be drawn from industry and elsewhere in the community. Volunteers can always relieve professionals of some of their tasks, and this possibility of augmenting the efficiency of the available staff should never be overlooked. However, volunteers must always work under professional supervision.

5. EQUIPMENT AND SUPPLIES

A comprehensive list of equipment and supplies for use in emergencies should be prepared for environmental health operations in cooperation with other services; but it is not necessary to stock all items in one place and the store belonging to environmental health division. The important point is that arrangement is made for their speedy transport and immediate availability where they are needed. Emergencies leave no time for urgent requisitioning and purchasing, which in many countries are subject to complicated rules and regulations. Heavy equipment is usually very expensive and need not be stored; 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 welfare agencies. A list of necessary chemical supplies, pipes, fittings and jointing materials, tools for mobile repair unit, spare pumps and power units, trucks, tanks and many other items may be prepared in collaboration with the officials in charge of water and sewage works. Follow-up is necessary to ensure that the equipment and supplies needed for emergency operation of water and sewage systems are purchased and stocked properly for speedy delivery and use. It is important to ensure that the equipment and supplies stored for emergency use conform to standard specifications so that the disaster afflicted community can benefit from the resources of other communities.

It is recommended that inventories be reviewed frequently by environmental health officials to keep them up to date. Periodic tests must be made to ensure that the equipment is always in working condition. These same supplies should be used for training and exercise purposes. Some items of equipment and supplies may be used in routine environmental sanitation operations and need not be stockpiled, but there should always be an adequate reserve of supplies.

6. TRANSPORT

Field vehicles such as Land Rover or Jeep, trucks, boats and planes are needed to mobilize men, equipment, and supplies. Suitable vehicles reduce the need for technical staff because they enable them to cover vaster areas. Moreover, an important factor in emergency work is speed and that can only be obtained by the use of adequate vehicles. It is recommended that engineers and sanitarians in planning and supervisory positions be provided with sufficient transport. Professional auxiliaries who have to work in more than one area also need transport. Trucks should also be made available for prompt delivery of equipment and supplies. Boats and planes may become necessary and the relief organizations must see to their availability.

7. LIVING FACILITIES AND FOOD SUPPLY FOR PERSONNEL

Emergency relief imposes long working hours and sometimes workers spend 14-16 hours a day in adverse environmental conditions for a considerable period. This hard work can exhaust the strongest person after a few days, and proper rest and food are needed to compensate for the loss of energy. In most

areas afflicted by disaster food soon becomes scarce. The relief personnel must be properly looked after so that they can continue working efficiently.

It is recommended, therefore, that the environmental health division make provisions for its own personnel. To depend on welfare agencies for food and shelter in unwise and unfair, as these agencies will already have more than enough to do to provide victims with shelter and food. Consequently, tents, stoves, cooking utensils, lamps, water containers, blankets, sleeping bags, foldable chairs and tables, packaged rations, and other camping equipment should be included in the supplies stored for use in emergencies.

8. RULES AND REGULATIONS

Sanitary rules and regulations designed for normal operations are not easy to apply in emergencies: they are too elaborate and detailed for such situations. Simple and brief regulations, tailored to the requirements of the actual situation and adapted to the existing possibilities, should therefore be worked out by supervisors and made known to the general public. This is a matter of applying basic principles to the improvised installations, and success depends to a great extent on ingenuity, training and experience of the supervisory environmental health personnel. Once realistic regulations are laid down they should be strictly observed.

9. COMMUNITY PARTICIPATION

The most efficient way of coping with an emergency is involvement of the community in planning for preparedness. After striking of a disaster, whether natural or man-made, there is always a period of isolation, the duration of which depends on geographical situation of the community and communication facilities. During this critical period the community has to depend on its own resources. Therefore, it is important that each community foresees what type of disaster it may encounter, makes an inventory of its resources to cope with the anticipated emergency, and makes the best arrangement possible for asking assistance from outside. If primary health care system is already established, it would not be difficult to secure community participation in emergency planning and preparedness.

10. A GLOSSARY OF TERMS

Disaster, natural — A natural disaster is an act of nature of such magnitude as to create a catastrophic situation in which the day-to- day patterns of life are suddenly disrupted and people are plunged into helplessness and suffering, and, as a result, need food, clothing, shelter, medical and nursing care and other necessities of life, and protection against unfavourable environmental factors and conditions [1].

Emergency — A situation in which normal local or national relief and public health service resources are not adequate, and emergency local, national or international resources must be called upon to cope with the situation [1].

Any situation implying unforeseen severe and immediate threats to public health [4].

Preparedness — Preparedness measures enable individuals and institutions to respond rapidly and effectively to emergency situations created by any type of disaster. Such measures include formulating and updating contingency plans, training personnel, and maintaining inventories of resources [5].

Mitigation — Mitigation measures are aimed at reducing the impact of a natural disaster on a population or country. Developing and enforcing building codes, for instance, will reduce losses in the event of earthquakes or hurricanes [5].

Prevention — Prevention measures are defined as measures aimed at impeding the occurrence of a natural event. Constructing a dam or levy to control floods is one example of a preventive measure. Hurricanes and earthquakes cannot be prevented with the technology presently available [5].

REFERENCES

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[5] Disaster Preparedness in the Americas, Issue No. 28 October 1986 (Pan American Health Organization).