E9: Disaster Management

Module 5

Response: managing emergencies and disasters

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Acknowledgements

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Module 5

Response: managing emergencies and disasters

Introduction

Module Five focuses on operational response structures and mechanisms. The module emphasises the importance of developing and implementing a systematic approach to respond to emergencies and disasters.

Upon completion of this unit you will be able to

Outcomes

- *explain* the role played by early warning systems in mitigating the impact of natural disasters

- *describe* the principles and components of an incident management system

- *describe* how an emergency operations centre operates

- *describe* critical roles and responsibilities in an emergency

- *describe* various standard operating procedures that will facilitate an efficient response to an emergency

- *demonstrate* how critical resources may be managed during emergencies

- *discuss* the importance of communication in co-ordinating an efficient response

- *explain* the dynamics and complexities of post-disaster response, including rapid assessment, resource management and communication

- *discuss* the subtleties of urban search and rescue.

Unit 11

Early warning and early warning systems

Introduction

Unit 11 provides an introduction to the critical function of early warning and early warning systems.

Upon completion of this unit you will be able to:

Outcomes

- *explain* the critical role played by early warning systems in mitigating the negative impacts of natural disasters

- *describe* the elements of an effective early warning system.

Terminology

Terminology

Agency Representative (AREP)	This ICS position serves as the point of contact for an assisting or co-operating agency which has been delegated authority to make decisions on matters affecting that agency's participation at the incident, and reports to the liaison officer.
Complex emergency	A humanitarian crisis in a country or region where there is a breakdown of authority resulting from internal and/or external conflict and which requires an international response that exceeds the capacity or mandate of any single agency (IASC, 1994).
Disaster	A serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the affected community's coping capacity (UN, 1992). Disasters are usually larger in scale than emergencies.

Early warning system terminology

An early warning system is the provision of timely and effective information, through identified institutions, that allows individuals exposed to a hazard to take action to avoid or reduce their risk and prepare for effective response. Early warning systems include a chain of concerns: understanding and mapping the hazard, monitoring and forecasting impending events, processing and disseminating understandable warnings to political authorities and the population, and undertaking appropriate and timely actions in response to the warnings. (Source: UN ISDR Terminology on Disaster Risk Reduction)

Early warning systems empower individuals and communities threatened by hazards to act in sufficient time and in an appropriate manner to reduce the possibility of personal injury, loss of life, damage to property and the environment, and loss of livelihoods. The expression "people-centered early warning systems" is used to emphasise that warning systems must recognise human needs and human behaviour, and must be developed with local participation from both women and men.

Assessing capacity to provide the four elements of early warning is the first step to identifying areas of weakness and necessary measures to fill gaps. Strategies to develop or strengthen early warning systems should ensure all elements are effective; weakness in one early warning element can result in failure of the entire system.

Elements of early warning systems

Early warning is more than just a prediction. Each complete early warning system comprises four elements:

1. **Risk knowledge**: systematically collect data and undertake risk assessments

2. **Monitoring and warning service**: develop hazard monitoring and early warning services

3. **Dissemination and communication:** communicate risk information and early warnings

4. **Response capability**: build national and community response capabilities.

Figure 1: Elements of early warning systems

Source: UN/ISDR, Platform for the Promotion of Early Warning (PPEW)

Why is it important?

Early warning and preparedness plays a critical role in preventing hazardous events turning into disasters. Clear warnings, received in time, coupled with the knowledge of how to react, can mean the difference between life and death, or between economic survival and ruin, for individuals and communities.

Early warning and preparedness systems are widely acknowledged as good investments to protect life and property. But many countries and communities still do not have effective systems and are highly vulnerable to natural hazards. This was sadly demonstrated once again in the Indian Ocean Tsunami in December 2004 which killed more than 200,000 people.

Early warning and disaster preparedness

Early warning refers to the systematic collection and analysis of information to anticipate and identify emerging, deteriorating or reoccurring humanitarian crises. Early warning allows the public and

emergency responders to take pre-emptive and protective action to avoid harm. Early warning should trigger action by designated agencies or community members to prepare for a hazard event and/or assist the evacuation in an area at risk.

At a minimum, as part of the national preparedness capability, disaster authorities should be linked to the meteorological and seismic monitoring departments both nationally and regionally, and to key government or academic institutions that consistently track disaster trends. Depending on the hazard type, community-based monitoring mechanisms may be able to monitor changes at the local level.

The challenge for the agency responsible for disaster management is to generate effective analysis and application of multiple information sources, particularly in cases where information can at times be contradictory. As soon as a potential hazard event is detected, organisations with responsibilities within the disaster preparedness system should be notified, and stand-by capacities mobilised for action.

National institutional arrangements for preparedness should clearly designate who can authorise the release of warnings to the public, what organisations should be notified, and the procedures to be followed. Standard warning formats and elements should be prepared in advance, and appropriate means or systems for issuing the warning should be determined, based on the nature of the imminent hazard event. These systems should be consistent for all hazards.

Early warning dissemination

It is imperative that preparedness and warning systems are designed to reach the entire population, including seasonal populations and remote locations. These communication systems should be two-way and interactive to allow for verification that warnings have been received and to be able to monitor the impact of an event. Alerts and messages should be geographically specific so that warnings are targeted to those at risk only.

It is also advisable to ensure that multiple communication mediums are used for warning dissemination (for example, mass media and informal communication). Warnings generated should be distributed to those at risk by credible sources (such as government, spiritual leaders and respected community organisations). Volunteer networks can also be trained and empowered to receive and widely spread hazard warnings to remote households and communities. Relying solely on technology, such as mobile telephones, which are vulnerable during hazard events, should be avoided.

Dissemination systems should be tailored to the needs of individual communities (for example, radio or television for those with access; and

sirens, warning flags or messenger runners for remote communities). Warning alerts and messages should also be tailored to the specific needs of those at particularly high risk (such as those of diverse cultural, social, gender, linguistic and educational backgrounds). Messages should incorporate the understanding of the values, concerns and interests of those who will need to take action (for example, instructions for safeguarding livestock and pets).

It is also important to try to minimise the number of false alarms to maintain trust in the warning system.

Equipment and infrastructure

The organisation in charge of warning should also be constantly linked to a fully equipped and co-ordinated monitoring network that can provide on-going data analysis during a hazard event.

These warning centres need to be operational and staffed at all times with trained personnel.

Appropriate resources should also be in place to maintain equipment and to provide back-up systems in the event of a failure. In establishing these systems, international organisations or experts can provide assistance in the identification and procurement of appropriate equipment and in ensuring its compatibility with regional or international systems. In some cases, it may also be appropriate to negotiate agreements to use private sector resources, where appropriate, in advance (such as amateur radios or safety shelters).

In order to be effective, early warning systems must also be tested to make sure messages are well understood and that systems function effectively.

Public education and awareness-raising

Public education and awareness-raising before any hazard event is also essential. Ideally, on-going public awareness and education activities on disaster preparedness should be built in to school curriculums from primary schools to university. Public education and awareness-raising activities should provide clear information on hazards, vulnerabilities, risks and how to reduce disaster impacts to vulnerable communities and decision-makers. They should also provide community education on how warnings will be disseminated and on how to respond to different types of hazards after an early warning message is received.

Using mass media and folk or alternative media to improve public awareness can also be effective. In addition, public awareness and education campaigns should be tailored to the specific needs of each target group (such as children, emergency managers or media). Public awareness strategies and programmes should be reviewed at least once a year (so they can be updated, as required).

Words into action

More information on hazard monitoring and early warning is included in: Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters.

Activity 5.1

Activity

Consider, then list, the early warning systems and/or means available in your jurisdiction to alert residents of an impending disaster, such as a tsunami, flash flood or hazardous material release.

Unit summary

Summary

In this unit you learned the importance of early warning in mounting an effective and timely response to an evolving disaster and about the available global warning systems.

Unit 12

Initial response

Introduction

In this unit we will look at the difference between crisis and consequence management, the principles and components of the emergency site management and incident management systems, including the critical roles and responsibilities of key functionaries.

Upon completion of the unit you will be able to:

Outcomes

- *identify* the principles and components of site management and incident management systems

- *describe* how an emergency operations centre operates

- *describe* critical roles and responsibilities in an emergency

- *describe* various standard operating procedures that will facilitate an efficient response to an emergency

- *discuss* how critical resources may be managed during emergencies

- *identify* the importance of communication in co-ordinating an efficient response.

Terminology

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Agency Representative (AREP)	This ICS position serves as the point of contact for an assisting or co-operating agency which has been delegated authority to decide on matters affecting that agency's participation at the incident and reports to the liaison officer.
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Disaster	A serious disruption to the functioning of society, causing widespread human, material or environmental losses which exceed the affected community's coping capacity. Disasters are usually larger in scale than emergencies.

Emergency	An unplanned event that requires the immediate co-ordination of services to protect the health, safety or welfare of a community, or to limit damage to property or the environment
Emergency Operations Centre (EOC)	The physical location where an organisation comes together during an emergency to co-ordinate response and recovery actions and resources. These centres may alternatively be called command centres, situation rooms, war rooms, crisis management centres, or other similar terms.
Emergency planning	The process involving activities undertaken by individuals and organisations before a disaster to enhance their ability to effectively respond to that disaster. (This term is occasionally used interchangeably with "emergency preparedness").
Emergency response	The actions taken to save lives and prevent further damage in a disaster or emergency.
First receiver	Those hospital emergency department personnel manage self-evacuees directly from an incident site.
First responder	Appropriate trained personnel who respond to an incident site, such as police, fire and emergency medical services.
Incident Command Post (ICP)	Location at which primary command functions are executed. The ICP may be co-located with the incident base or other incident facilities.
Incident commander	This ICS position is responsible for overall management of the incident and reports to the administrator for the agency having incident jurisdiction. This position may have one or more deputies assigned from the same agency or from an assisting agency(s).
Operational area	A geographic area of responsibility in which response operations are conducted.
Risk	The combined effect of the *probability* that a particular event will take place and the *consequence* of that event.
Unified command	In ICS, unified command is a unified team effort which allows all agencies with jurisdictional responsibility for the incident, either geographical or functional, to manage an incident by establishing a common set of incident objectives and strategies.

Response management

Overview

Emergency response refers to measures taken to respond to an emergency. The aim of these measures is to ensure a controlled, co-ordinated and effective response is quickly undertaken at the outset of the emergency to minimise its impact on public safety. When an emergency occurs, the immediate focus of operations is on meeting the emergency needs of people, saving lives and protecting property and the environment. This effort may last from a few hours to several days or longer, depending on the situation. As response activities begin to taper off, the operational focus begins to shift from response to recovery. The transition from response to recovery must be as smooth and as seamless as possible.

Response occurs after the onset of an emergency and is intended to provide emergency assistance for casualties, including search and rescue, shelters and medical care, to reduce the probability or extent of secondary damage through such security patrols and to reduce damage.

The immediate response is accomplished within the affected area by local government agencies and segments of the private sector. One or more of the following conditions may apply during this phase:

- The situation can be managed without mutual aid assistance.

- Evacuation of certain areas may be required due to uncontrollable, immediate and ensuing threats.

- Mutual aid from outside the operational area is required.

- The neighbouring jurisdictions to the operational area are either minimally impacted, or not impacted at all, and are requested to provide mutual aid to other jurisdictions.

- Proclamation of a local emergency.

Response phase

The top priorities during the response phase are: saving lives and property; control of the situation and minimising effects of the disaster. This is the phase when emergency management plans are activated. Steps taken during this phase include:

1. activating plan(s)

2. deploying resources

3. activating communication plans

4. working with community partners/first responders

5. accounting for students and staff

6. making informed decisions

7. accelerating the recovery phase.

Response concept

Emergency response is based upon an escalated (gradual) and controlled application of resources to meet the needs of each situation and its unique requirements.

Emergency response is founded on the following general concepts:

- Individual citizens are responsible for preparing themselves for emergencies.

- Sustained disaster response is the function of larger entities (such as, response agencies, local authorities).

- Disaster response is ORDINARILY the responsibility of local authorities.

- When appropriate, provincial and federal resources may be offered in support of the response effort by the affected local authority (this would be achieved gradually to meet the escalating needs of the situation).

Responders and receivers

Critical to an effective response is an appropriately trained core of public safety employees and other related personnel, including volunteers.

Traditional responders are personnel specifically trained to an emergency/disaster to contain the incident and render life-saving assistance to victims and generally include personnel from:

- police
- fire service
- emergency medical services
- emergency communications
- public health
- hospital emergency
- public utilities and works
- Red Cross/Crescent.

Non-traditional responders. Many people who do not fall into the previous category seek out or receive Certified First Responder training and may include emergency social service volunteers from:

- service clubs and societies
- faith-based organisations
- search and rescue volunteers

- community emergency response team (CERT) members
- designated industrial workers in a large facility (industrial plant) or at a remote site (fish-packing plant, commercial vessel, oil rig).

Crisis and consequence management

The response to emergencies will normally have two components.

1. Crisis management is predominantly a first responder function and includes measures to identify, acquire, and plan the use of resources needed to anticipate, prevent and/or resolve a threat. A crisis management response may include traditional law enforcement missions, such as intelligence, surveillance, tactical operations, negotiations, forensics and investigations, as well as technical support missions, such as agent identification, render safe procedures, transfer and disposal, and limited decontamination. In addition to the traditional missions, crisis management also includes assurance of public health and safety.

2. Consequence management is predominantly an emergency management function and includes measures to protect public health and safety, restore essential government services, and provide emergency relief to governments, businesses and individuals affected by the consequences that emerge.

Operational priorities

In the event of a major disaster which affects multiple jurisdictions and threatens to overwhelm their resources, the appropriate level of government must be prepared to assume command and control to ensure the delivery of essential services.

The response to an emergency will always be at a level appropriate to the scale of the situation and will be in concert with the integrated regional or national response model. The response structure and activities will conform to either the Emergency Site Management or the Incident Command System (ICS) and will normally include the following stages:
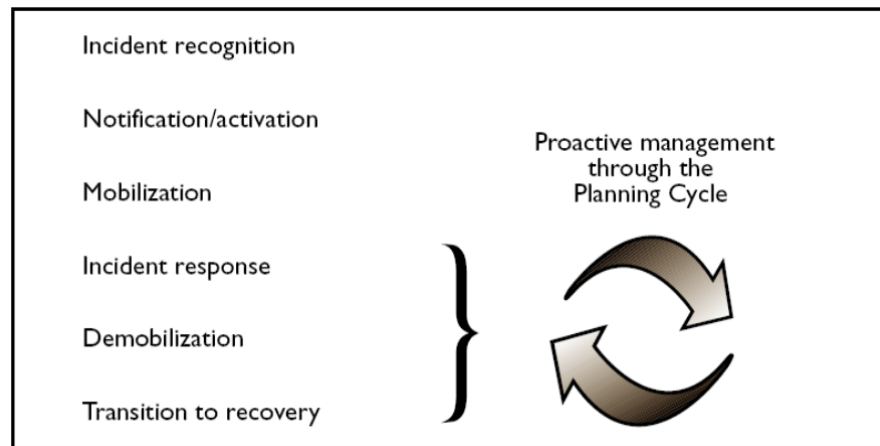
Figure 2: Response Concept

Source: Figure adapted by Wayne Dauphinee from various public domain sources.

Response approach

There are two primary approaches to emergency response:

1. Emergency site management (ESM)
2. Incident command system (ICS).

Emergency site management

Overview

Emergency site management (ESM) builds on the presence of organisation-specific disaster management processes (or systems) to provide a broad approach to the management of disasters at local level.

The ESM is based on a multi-tiered framework for communications, joint (or co-ordinated) decision-making, and the co-ordination of activities or resources. It does not intend to undermine, usurp or interfere with the command and control, or the reporting structures of the various response agencies. In fact, the system helps the interaction among the various emergency response organisations at two primary locations: the emergency site and the municipal emergency operations centre (EOC).

Description

The ESM system contains a number of roles, general procedures and expectations. It is, by design, a flexible system that allows for the inclusion and integration of various agencies, jurisdictions and systems into a municipal framework. The system assumes the continuation of pre-disaster organisational lines of authority. The only "subordination" (if any) is to the officials of the local authority (municipality) and their legal responsibility to protect their citizens from harm.

The system designates the responsibility for managing the emergency site to a site manager and a site team of senior representatives from each of the key emergency response organisations at the site. The team's main task is to return the situation at the site to normal as soon as possible.

The response effort at the site must rely upon support from and through the municipal EOC. That EOC should serve as the focal point, or as a funnel, to channel all needed response resources to the site. Additionally, the municipal EOC should concentrate on the immediate day-to-day needs of the municipality and the recovery needs of its members (individuals, businesses).

The ESM system assumes and accepts the presence of other EOCs and the application of other single service command/management systems (incident command system, fire ground command) or more comprehensive variants such as the unified command system. However, the system's main focus is to provide one framework to integrate and co-ordinate municipal emergency response operations.

System activation

The ESM system should be activated when there is a need for any of the following:

- more complex response systems and procedures than are used in "normal" day-to-day operations

- critical resources beyond those available within the municipality

- greater co-ordination of the activities of the diverse response organisations within the municipality

- extra legal powers (always gained through a "declaration of a state of local emergency").

The ESM system may be activated in a variety of ways depending on the circumstances relating to the disaster situation. The system is normally initiated as an escalation of the normal response procedure of the local response organisations (fire, police and emergency medical services). In other words, disaster response commonly begins when fire, police or EMS resources are dispatched to what is believed to be an "incident".

When these responders arrive at the scene and realise the magnitude of their task, they often ask their dispatch/communication centre for additional resources and immediately begin their own response effort. These notification and response activities are likely to be repeated by representatives of all response organisations at the emergency scene. At some point, municipal response organisations begin to realise they are dealing with a "disaster site" and not an "incident scene". This occurs when the resources available to them are stretched to the limit, or when they realise that their organisation is facing a task beyond its mandate or capability. This observation, which naturally leads to the need for a concerted effort, may be made by a number of people including:

- field personnel, as they rapidly band together for a more concerted and co-ordinated effort)

- senior members of the various response agencies who are located at the scene

- other key municipal officials (such as elected officials, directors of disaster services, city manager, town clerk, or other appointees).

When the need for concerted effort is confirmed at municipal level the ESM system must be put into action as quickly as possible. That implies the following:

- A site manager must be appointed and dispatched to the disaster site. (In many municipalities the organisation which is to provide the site manager is pre-designated in the municipal emergency plan. All that is left to do then is to nominate or appoint the individual.)

- The site manager should determine the location of the site command post.

- All senior representatives of the response agencies at the emergency site should be advised of the appointment of the site manager and the location of the site command post.

- The emergency site should be defined (that is, given geographical boundaries or outer perimeter) by the site manager and those at the municipal EOC.

- All agency/department command posts should, where possible, be co-located with the site command post.

- The municipal EOC, if available, should be opened and staffed. (The degree of its staffing should reflect the needs of the situation.)

- A declaration of a "state of local emergency" should be made, as appropriate.

From this point on, the emergency site should be under the direct management of the site manager and the site team. They, in turn, should be supported by the municipal EOC. Let us then look at the membership and roles of the municipal EOC control group and the site team (including the site manager).

Incident command system

Overview

Many municipalities and businesses adapt their traditional command and control structures to the incident command system (ICS). Emergency operations management at the scene is concerned with minute-to-minute tactical decision-making and problem solving, matching resource capabilities to priority needs. The basic foundation for any effective on-scene management capability is adequate communication and co-

ordination with the emergency operations centre. The incident command system (ICS) is designed to provide this fundamental co-ordination in emergency management, business continuity, crisis management, or disaster recovery situations.

The incident command system (ICS)

The ICS is a standardised management tool for meeting the demands of small or large emergency or non-emergency situations.

- The ICS represents "best practices" and has become the standard for emergency management across the country.
- The ICS may be used for planned events, natural disasters and acts of terrorism.

The ICS is a management system designed to enable effective and efficient domestic incident management by integrating a combination of facilities, equipment, personnel, procedures and communications operating within a common organisational structure, designed to enable effective and efficient domestic incident management. A basic premise of ICS is that it is widely applicable. It is used to organise both near-term and long-term field-level operations for a broad spectrum of emergencies, from small to complex incidents, both natural and manmade. ICS is used by all levels of government as well as by many private-sector and non-governmental organisations. ICS is also applicable across disciplines. It is normally structured to facilitate activities in five major functional areas: command, operations, planning, logistics, and finance and administration.

ICS features

The 14 essential ICS features are listed below:

1. **Common terminology:** Using common terminology helps to define organisational functions, incident facilities, resource descriptions, and position titles.

2. **Modular organisation:** The incident command organisational structure develops in a top-down, modular fashion that is based on the size and complexity of the incident, as well as the specifics of the hazard environment created by the incident.

3. **Management by objectives:** Includes establishing overarching objectives; developing and issuing assignments, plans, procedures, and protocols; establishing specific, measurable objectives for various incident management functional activities; and directing efforts to attain the established objectives.

4. **Reliance on an incident action plan:** Incident action plans (IAPs) provide a coherent means of communicating the overall incident objectives in the contexts of both operational and support activities.

5. **Chain of command and unity of command:** Chain of command refers to the orderly line of authority within the ranks of the incident management organisation. Unity of command means that every individual has a designated supervisor to whom he or she reports at the scene of the incident. These principles clarify reporting relationships and eliminate the confusion caused by multiple, conflicting directives. Incident managers at all levels must be able to control the actions of all personnel under their supervision.

6. **Unified command:** In incidents involving multiple jurisdictions, a single jurisdiction with multi-agency involvement, or multiple jurisdictions with multi-agency involvement, unified command allows agencies with different legal, geographic and functional authorities and responsibilities to work together effectively without affecting individual agency authority, responsibility or accountability.

7. **Manageable span of control:** Span of control is key to effective and efficient incident management. Within ICS, the span of control of any individual with incident management supervisory responsibility should range from three to seven subordinates.

8. **Predesignated incident locations and facilities:** Various types of operational locations and support facilities are established in the vicinity of an incident to accomplish a variety of purposes. Typical predesignated facilities include incident command posts, bases, camps, staging areas, mass casualty triage areas and others as required.

9. **Resource management:** Resource management includes processes for categorising, ordering, dispatching, tracking and recovering resources. It also includes processes for reimbursement for resources, as appropriate. Resources are defined as personnel, teams, equipment, supplies and facilities available or potentially available for assignment or allocation in support of incident management and emergency response activities.

10. **Information and intelligence management:** The incident management organisation must establish a process for gathering, sharing and managing incident-related information and intelligence.

11. **Integrated communications:** Incident communications are facilitated through the development and use of a common communications plan and interoperable communications processes and architectures.

12. **Transfer of command:** The command function must be clearly established from the beginning of an incident. When command is transferred, the process must include a briefing that captures all essential information for continuing safe and effective operations.

13. **Accountability:** Effective accountability at all jurisdictional levels and within individual functional areas during incident

operations is essential. To that end, the following principles must be adhered to:

i. **Check-in:** All responders, regardless of agency affiliation, must report in to receive an assignment in accordance with the procedures established by the incident commander.

ii. **Incident action plan:** Response operations must be directed and co-ordinated as outlined in the IAP.

iii. **Unity of command:** Each individual involved in incident operations will be assigned to only one supervisor.

iv. **Span of control:** Supervisors must be able to adequately supervise and control their subordinates, as well as communicate with and manage all resources under their supervision.

v. **Resource tracking:** Supervisors must record and report resource status changes as they occur.

14. **Deployment:** Personnel and equipment should respond only when requested or when dispatched by an appropriate authority.

Position titles

At each level within the ICS organisation, individuals with primary responsibility positions have distinct titles. Titles provide a common standard for all users. For example, if one agency uses the title branch chief, another branch manager, this lack of consistency can cause confusion at the incident.

The use of distinct titles for ICS positions allows for filling ICS positions with the most qualified individuals rather than by seniority. Standardised position titles are useful when requesting qualified personnel. For example, in deploying personnel, it is important to know if the positions needed are unit leaders or clerks.

Listed below are the standard ICS titles:

Organisational level	Title	Support position
Incident command	Incident commander	Deputy
Command staff	Officer	Assistant
General staff (section)	Chief	Deputy
Branch	Director	Deputy
Division/group	Supervisor	N/A
Unit	Leader	Manager
Strike team/task force	Leader	Single resource boss

ICS organisation


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                        ┌──────────────────┐
                        │     COMMAND      │
                        └──────────────────┘
        ┌──────────────────┐       │
        │ Command Staff    │───────┤
        │ Information Officer│      │
        │ Liaison Officer  │       │
        │ Safety Officer   │       │
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│ Operations│ │ Planning  │ │ Logistics │ │ Finance and│
│ Section   │ │ Section   │ │ Section   │ │ Administration│
│           │ │           │ │           │ │ Section   │
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DOERS

Branches
  Divisions
    Groups
      Strike Teams
      Task Forces

THINKERS

- Resources Unit
- Situation Unit
- Documentation Unit

GETTERS

Services Branch
- Communications Unit
- Medical nit
- Food Unit

Support Branch
- Facilities Unit
- Supplies Unit
- Transport Unit

PAYERS

- Time Unit
- Procurement Unit
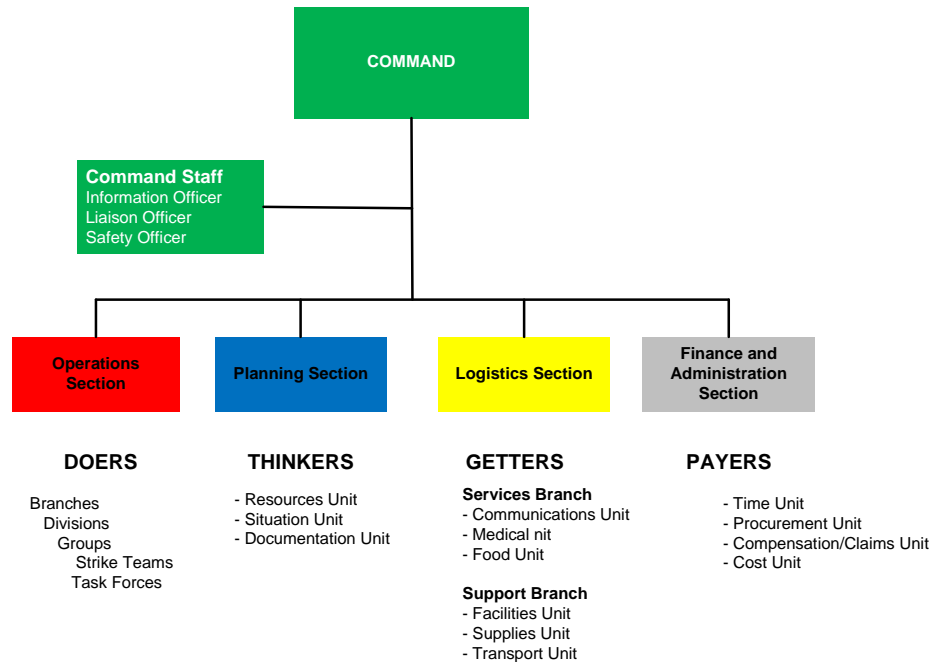- Compensation/Claims Unit
- Cost Unit

Figure 3: ICS Organisational structure

Source: Figure adapted by Wayne Dauphinee from various public domain sources.

Command staff: The command staff consists of the public information officer, safety officer and liaison officer. They report directly to the incident commander.

General Staff: The organisation level having functional responsibility for primary segments of incident management (operations, planning, logistics, finance/administration). The section level is organisationally between branch and incident commander.

Branch: The organisational level having functional, geographical or jurisdictional responsibility for major parts of the incident operations. The branch level is organisationally between section and division/group in the operations section, and between section and units in the logistics section. Branches are identified by the use of Roman numerals, by function or by jurisdictional name.

Division: The organisational level having responsibility for operations within a defined geographic area. The division level is organisationally between the strike team and the branch.

Group: Groups are established to divide the incident into functional areas of operation. Groups are located between branches (when activated) and resources in the operations section.

Unit: The organisation element having functional responsibility for a specific incident planning, logistics, or finance/administration activity.

Task force: A group of resources with common communications and a leader that may be pre-established and sent to an incident, or formed at an incident.

Strike team: Specified combinations of the same kind and type of resources, with common communications and a leader.

Single resource: An individual piece of equipment and its personnel complement, or an established crew or team of individuals with an identified work supervisor that can be used on an incident.

Overall organisational functions

ICS was designed by identifying the primary activities or functions necessary to effectively respond to incidents. Analyses of incident reports and review of military organisations were all used in ICS development. These analyses identified the primary needs of incidents.

As incidents became more complex, difficult, and expensive, the need for an organisational manager became more evident. Thus in ICS, and especially in larger incidents, the incident commander manages the organisation and not the incident.

In addition to the command function, other desired functions and activities were:

- to delegate authority and to provide a separate organisational level within the ICS structure with sole responsibility for the tactical direction and control of resources

- to provide logistical support to the incident organisation

- to provide planning services for both current and future activities

- to provide cost assessment, time recording and procurement control necessary to support the incident and the managing of claims

- to promptly and effectively interact with the media, and provide informational services for the incident, involved agencies and the public

- to provide a safe operating environment within all parts of the incident organisation

- to ensure that assisting and co-operating agencies' needs are met, and to see that they are used in an effective manner.

Information and intelligence

The analysis and sharing of information and intelligence are important elements of ICS. In this context, intelligence includes not only national security or other types of classified information but also other operational

information, such as risk assessments, medical intelligence (that is, surveillance), weather information, geospatial data, structural designs, toxic contaminant levels, and utilities and public works data, that may come from a variety of different sources.

Traditionally, information and intelligence functions are located in the planning section. However, in exceptional situations, the incident commander may need to assign the information and intelligence functions to other parts of the ICS organisation. In any case, information and intelligence must be appropriately analysed and shared with personnel, designated by the incident commander, who have proper clearance and a "need to know" to ensure they support decision-making.

The information and intelligence function may be organised in one of the following ways:

- Within the command staff. This option may be most appropriate in incidents with little need for tactical or classified intelligence and in which incident-related intelligence is provided by supporting agency representatives, through real-time reach-back capabilities.

- As a unit within the planning section. This option may be most appropriate in an incident with some need for tactical intelligence and when no law enforcement entity is a member of the unified command.

- As a branch within the operations section. This option may be most appropriate in incidents with a high need for tactical intelligence (particularly classified intelligence) and when law enforcement is a member of the unified command.

- As a separate general staff section. This option may be most appropriate when an incident is heavily influenced by intelligence factors or when there is a need to manage and/or analyse a large volume of classified or highly sensitive intelligence or information. This option is particularly relevant to a terrorism incident, for which intelligence plays a crucial role throughout the incident life-cycle.

Regardless of how it is organised, the information and intelligence function is also responsible for developing, conducting and managing information-related security plans and operations as directed by the incident action plan.

These can include information security and operational security activities, as well as the complex task of ensuring sensitive information of all types (classified information, sensitive law enforcement information, proprietary and personal information, or export-controlled information) is handled in a way that not only safeguards the information but also ensures it gets to those who need access to it so they can effectively and safely conduct their missions.

The information and intelligence function also has the responsibility for co-ordinating information- and operational-security matters with public awareness activities that fall under the responsibility of the public

information officer, particularly where such public awareness may affect information or operations security.

Unified command

The unified command organisation consists of the incident commanders from the various jurisdictions or agencies operating together to form a single command structure.

Unified command is an important element in multi-jurisdictional or multi-agency domestic incident management. It provides guidelines to enable agencies with different legal, geographic and functional responsibilities to co-ordinate, plan and interact effectively.

As a team effort, unified command overcomes much of the inefficiency and duplication of effort that can occur when agencies from different functional and geographic jurisdictions, or agencies at different levels of government, operate without a common system or organisational framework.

All agencies with legal authority or functional responsibility for any or all aspects of an incident and those able to provide specific resource support take part in the unified command structure and contribute to the process of determining overall incident strategies by: selecting objectives; ensuring that joint planning for tactical activities is accomplished in accordance with approved incident objectives; ensuring the integration of tactical operations; and approving, committing, and making optimum use of all assigned resources.

The exact composition of the unified command structure depends on the location(s) of the incident (that is, which geographical administrations are involved) and the type of incident (which functional agencies of the involved jurisdiction(s) are required). In the case of some broader incidents, the designation of a single incident commander may be considered to promote greater unity of effort and efficiency.

Authority

Authority and responsibility for an incident commander to manage an incident or event comes in the form of a delegation of authority from the agency executive or administrator of the jurisdiction of occurrence or is inherent in existing agency policies and procedures. When an incident or event spans multiple jurisdictions this responsibility belongs to the various executives or administrators who set policy and are accountable to their jurisdictions or agencies. They must appropriately delegate to the unified commanders the authority to manage the incident. Given this authority, the unified commanders will then collectively develop one comprehensive set of incident objectives, and use them to develop strategies.

Advantages of using unified command

The advantages of using unified command include:

- A single set of objectives is developed for the entire incident.

- A collective approach is used to develop strategies to achieve incident objectives.

- Information flow and co-ordination is improved between all jurisdictions and agencies involved in the incident.

- All agencies with responsibility for the incident have an understanding of joint priorities and restrictions.

- No agency's legal authorities will be compromised or neglected.

- The combined efforts of all agencies are optimised as they perform their respective assignments under a single incident action plan.

Planning process

It was recognised early in the development of the ICS that the critical factor of adequate planning for incident operations was often overlooked or not given enough emphasis. This resulted in poor use of resources, inappropriate strategies and tactics, safety problems, higher incident costs and lower effectiveness.

Those involved in the original ICS development felt there was a need to develop a simple but thorough process for planning that could be used for both smaller, short-term incidents and events, and for longer, more complex incident planning. The planning process may begin with the scheduling of a planned event, the identification of a credible threat, or the initial response to an actual or impending event. The process continues with the implementation of the formalised steps and staffing required to develop a written incident action plan (IAP).

The primary phases of the planning process are essentially the same for the incident commander who develops the initial plan, for the incident commander and operations section chief revising the initial plan for extended operations, and for the incident management team developing a formal IAP, each following a similar process. During the initial stages of incident management, planners must develop a simple plan that can be communicated through concise oral briefings. Frequently, this plan must be developed very quickly and with incomplete situation information. As the incident management effort evolves over time, additional lead time, staff, information systems, and technologies enable more detailed planning and cataloguing of events and "lessons learned".

Planning involves:

- evaluating the situation

- developing incident objectives

- selecting a strategy

- deciding which resources should be used to achieve the objectives in the safest, most efficient and cost-effective manner.
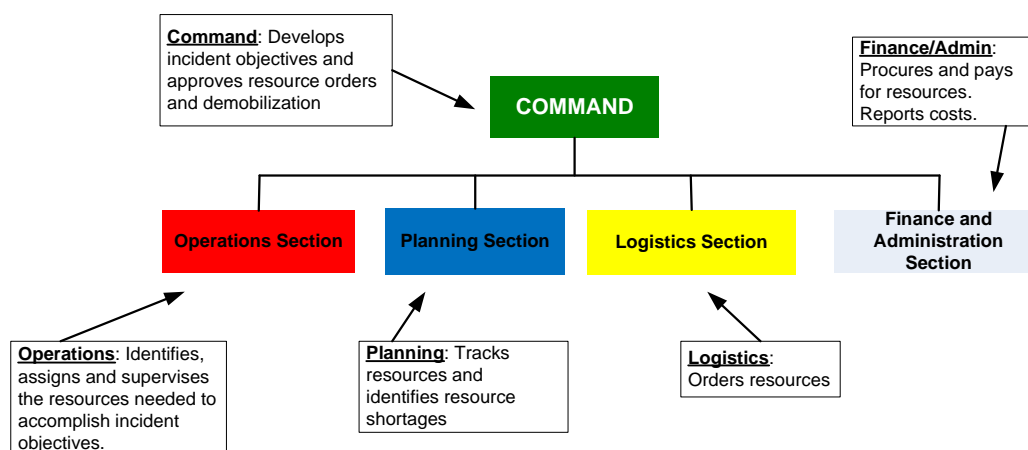
Figure 4: Organisational chart showing who does what.

Source: Figure adapted by Wayne Dauphinee from various public domain sources.

Incident complexity

"Incident complexity" is the combination of factors that affect the probability of control of an incident. Many factors determine the complexity of an incident, including, area involved, threat to life and property, political sensitivity, organisational complexity, jurisdictional boundaries, values at risk, weather, strategy and tactics, and agency policy, among others.

Incident complexity is considered when making incident management level, staffing and safety decisions.

Various analysis tools have been developed to assist consideration of important factors involved in incident complexity. Factors that may be considered in analysing incident complexity are:

- impacts to life, property, and the economy
- community and responder safety
- potential hazardous materials
- weather and other environmental influences
- likelihood of cascading events
- potential crime scene (including terrorism)
- political sensitivity, external influences and media relations
- area involved, jurisdictional boundaries
- availability of resources.

Incident types

Incidents may be typed in order to make decisions about resource requirements. Incident types are based on the following five levels of complexity.

Type 5	• The incident can be handled with one or two single resources with up to six personnel. • Command and general staff positions (other than the incident commander) are not activated. • No written IAP is required. • The incident is contained within the first operational period and often within an hour to a few hours after resources arrive on scene. • Examples include a vehicle fire, an injured person, or a police traffic stop.
Type 4	• Command staff and general staff functions are activated only if needed. • Several resources are required to mitigate the incident. • The incident is usually limited to one operational period in the control phase. • The agency administrator may have briefings, and ensure the complexity analysis and delegation of authority is updated. • No written IAP is required, but a documented operational briefing will be completed for all incoming resources. • The role of the agency administrator includes operational plans including objectives and priorities.
Type 3	• When capabilities exceed initial attack, the appropriate ICS positions should be added to match the complexity of the incident. • Some or all of the command and general staff positions may be activated, as well as division/group supervisor and/or unit leader level positions. • A Type 3 incident management team (IMT) or incident command organisation manages initial action incidents with a significant number of resources, an extended attack incident until containment/control is achieved, or an expanding incident until transition to a Type 1 or 2 team. • The incident may extend into multiple operational periods. • A written IAP may be required for each operational period.
Type 2	• This type of incident extends beyond the capabilities for local control and is expected to go into multiple operational periods. A Type 2 incident may require resources out of area, including regional and/or national resources, to effectively manage the operations, command and general staffing. • Most or all of the command and general staff positions are filled. • A written IAP is required for each operational period. • Many of the functional units are needed and staffed. • The agency administrator is responsible for the incident complexity analysis, agency administrator briefings and the written delegation of authority.

Type 1	• This type of incident is the most complex, requiring national resources to safely and effectively manage and operate. • All command and general staff positions are activated. • Branches need to be established. • The agency administrator will have briefings, and ensure that the complexity analysis and delegation of authority are updated. • Use of resource advisors at the incident base is recommended. • There is a high impact on the local jurisdiction, requiring additional staff for office administrative and support functions.

Demobilisation

Demobilisation planning helps to:

- eliminate waste

- eliminate potential fiscal and legal impacts

- ensure a controlled, safe, efficient and cost-effective release process.

Demobilisation policies and procedures depend on the size of the incident and may involve:

- fiscal/legal policies and procedures

- work rules

- special licence requirements

- other requirements.

After-action review (AAR) tips

Overall tips

- Schedule an after-action review (AAR) as soon after the incident as possible.

- Keep it short and focused.

- Focus on WHAT, not WHO.

- Establish clear ground rules: encourage candour and openness (this is dialogue – not lecture or debate); focus on items that can be fixed; keep all discussions confidential.

- Use a skilled facilitator to conduct the AAR.

AAR process steps

Use the following questions to facilitate the AAR process:

What did we set out to do?

- Establish the facts.

- Determine the purpose of the mission and definition of success.

- Identify key tasks involved.

- Specify conditions under which each task may need to be performed (for example, weather, topography, time restrictions).

- Define acceptable standards for success (explain what "right" looks like).

What actually happened?

- Continue to establish the facts.

- Participants should come to agreement on what actually happened.

- Pool multiple perspectives to build a shared picture of what happened.

Why did it happen?

- Analyse cause and effect.

- Focus on WHAT, not WHO.

- Provide progressive refinement for drawing out explanations of what occurred. This will lead into developing possible solutions.

What are we going to do better next time?

- Solutions will arise naturally once problems are identified and understood.

- Focus on items you can fix, rather than external forces outside of your control.

- Identify areas where groups are performing well and that should be sustained. This will help repeat success and create a balanced approach to the AAR.

Are there lessons learned that should be shared immediately?

- Identify the process for sharing lessons learned.

- Option 1: Document the issue, discussion and recommendation.

- Option 2: Document the concept of the operation, results, trends and recommendation.

- Determine and describe the most notable successes from the incident.

- Determine and describe the most difficult challenges faced and how they were overcome.

What follow-up is needed?

- Be specific about actions, timelines and responsibilities.

- What changes, additions or deletions are recommended to SOPs, plans or training?

- What issues were not resolved to your satisfaction and need further review?

Activity 5.2

Activity

Read the questions and then circle your response. Check your answers at the end of this module.

1. A basic ICS principle is that the first incident commander is responsible until the:

   a. Five management functions are activated.

   b. Next operational period has begun.

   c. Event or incident has demobilised.

   d. Authority is delegated to another person.

2. Which position is the only one that is always staffed in ICS applications?

   a. Operations section chief

   b. Incident commander

   c. Public information officer

   d. Safety officer.

3. Every incident must have a verbal or written incident action plan. The purpose of this plan is to provide all incident supervisory personnel with direction for:

   a. Taking actions based on the objectives identified in the plan during the operational period.

   b. Maintaining documentation and tracking resources assigned to the incident.

   c. Monitoring the number of resources that report to any one supervisor.

   d. Obtaining and maintaining essential personnel, equipment and supplies.

4. Which general staff position conducts tactical operations, develops the tactical objectives and organisation, and directs all tactical resources?

   a. Finance/administration section chief

   b. Logistics section chief

   c. Operations section chief

   d. Planning section chief

5. At each level of the ICS organisation, individuals in positions of primary responsibility have distinct titles. Why?

   a. The use of distinct titles allows for filling ICS positions with the most qualified individuals rather than by rank.

b. Standard position titles are useful when requesting qualified personnel.

c. Titles provide a common standard for all users.

d. Distinct titles help clarify the activities undertaken by specific personnel. Position titles help to maintain the normal lines of authority within agencies. Prestige associated with certain titles helps to motivate responders.

Activity 5.3

Think about your organisation or agency and consider how you would determine which departments and personnel fit under which incident command system component, for example, planning or operations.

Activity

Unit summary

Summary

In this unit you learned about the difference between crisis and consequence management, the principles and components of the emergency site management and incident management systems, including the critical roles and responsibilities of key functionaries.

Unit 13

Emergency Operations Centre (EOC)

Introduction

In this unit we will cover the role and key functions of an Emergency Operations Centre (EOC). We will describe the principles of EOC layout and functioning and the criticality of emergency resource management.

Upon completion of this unit you will be able to:

Outcomes

- *define* the role and key functions of an EOC
- *identify* the principles of EOC layout and function
- *describe* the operation concept
- *explain* the subtleties of emergency resource management.

Terminology

Terminology

Concept of operations	The concept of operations will capture the sequence and scope of the planned response, explaining the overall approach to the emergency situation. The concept of operations should include division of responsibilities, sequence of action, how requests for resources will be met, and who and under what circumstances will request be made for additional aid.
Emergency operations centre (EOC)	An EOC is the physical location where an organisation comes together during an emergency to co-ordinate response and recovery actions and resources. These centres may alternatively be called command centres, situation rooms, war rooms, crisis management centres or other similar terms.
Incident command post (ICP)	Location at which primary command functions are executed. The ICP may be collocated with the incident base or other incident facilities.

Incident commander

This ICS position is responsible for overall management of the incident and reports to the agency administrator for the agency having incident jurisdiction. This position may have one or more deputies assigned from the same agency or from an assisting agency(s).

Unified command

In ICS, unified command is a unified team effort which allows all agencies with jurisdictional responsibility for the incident, either geographical or functional, to manage an incident by establishing a common set of incident objectives and strategies.

Overview

The emergency operations centre (EOC) is a facility providing direction and co-ordination of emergency response and recovery efforts before, during and after impending emergencies or disasters. The EOC may be co-located with an emergency co-ordination centre which serves as the central emergency reporting and notification centre on a day-to-day (24/7) basis.

The EOC is where the incident command team or other decision-making body is located. All pertinent decisions, communications, policies and operational orders originate from the EOC.

There are various ways emergency operation centres can work. There is a lot of debate on changing the concepts of a vertically oriented system to one with a more horizontal approach and vice versa. No matter what model is used in emergency response, the key to operations is to have an efficient EOC. What matters is how the EOC is managed.

Existing resources, patterns, communication channels and structures of authority are used for ease and efficiencies of operations, recognising that the aim is to return to normalcy as soon as possible. Most important is the way activities are managed as opposed to how they are directed.

Key functions

The key functions of the EOC are:

1. efficient mobilisation of personnel and resources

2. timely communication of information within and between local clusters or within organisations

3. timely communication with the public

4. resolution of conflicts over goals, tactics and resources

5. effective interaction with regional and national government units when needed

6. effective exercise of authority when needed.

In addition to this list of functions, the centre also helps the transition between response and recovery. The emergency co-ordinator or emergency planner needs to be unbiased in terms of decisions and allocation of resources. Furthermore, the co-ordinator or planner needs to have strengths in negotiation, mediation, problem solving and communication. The co-ordinator or planner should be able to motivate and organise those representing the company/organisation's resources and interests. Rigid and vertical hierarchical structures should be avoided, and a flexible, open and horizontal style of operation should be put into place in order to best cope with the high degree of uncertainty and number of complex issues. To paraphrase an old adage, "What is needed is not someone who does things right, but someone who does the right thing at the right time".

The ultimate message to crisis managers is to co-ordinate resources, knowledge and efforts. However, there are some guiding principles:

1. Assign disaster management responsibilities to people or departments who normally carry out similar responsibilities on a day-to-day basis. In other words, the finance department should be in charge of financial monitoring; the occupational health and safety officer should be in charge of employee safety; security should be in charge of site security; and so on.

2. Physically locate people who will have a close working relationship in adjoining spots. It makes sense to have the person responsible for tracking damage to company assets next to the person responsible for assessing the financial losses.

3. When assigning responsibilities, the most senior person in a department is not always the most capable or knowledgeable about the department when it comes to disaster response. Sometimes the assistant director or administrative assistant may be a better choice than the newly hired executive director.

EOC Facility: roles and operation

The EOC may be located anywhere within the municipality. It is often at or near City Hall or in another prominent public building. Municipal EOCs reflect a wide range of uses from those fully dedicated to emergency response to others which, between disasters, are also used for other purposes (such as meetings, training, storage and office space).

EOCs vary in size, layout and content. These variations reflect a number of "realities": the financial/resource capability of the municipality and its commitment to the emergency management process. Two points are worthy of note. One is that an EOC can greatly enhance the capacity of a municipality to respond to disasters. Part of that increased capacity is the

fact that an EOC draws people together during the planning process and especially during the response period. The other point is that there are many 'correct' ways to set up an EOC. Ultimately, the best measure of a municipal EOC is its ability to enhance inter-jurisdictional communication, decision-making and co-ordination during a disaster. However, a number of principles need to be considered and there are a number of valuable pointers about the layout and content of successful EOCs.

EOC layout

Principles

EOC operations are best understood through the lessons learned from the disaster-response experiences of numerous municipalities, organisations and agencies. Although their EOCs varied in content, layout and operational procedures, they met the functional requirements of multi-jurisdictional co-ordinated response and brought to light a number of valuable lessons. These emphasise the need for all EOCs to satisfy a number of fundamental operational needs. Key among them are:

- **Sufficient space.** The EOC must accommodate at least the members of the municipal EOC control group.

- **Accessibility.** The EOC must be easily accessible especially during disasters that result in a disruption to transport routes.

- **Availability**. Immediate and for the duration of the disaster. The municipal EOC must be made operational quickly, taking immediate priority over all else except the needs of the emergency site.

- **Security and protection.** The EOC and its operations must be secure from disruptions such as power failure, flooding or wind storms.

- **Privacy.** The EOC must be located and configured to allow its members total privacy to conduct their business.

- **Sufficient and secure communications.** Facility MUST have the appropriate resources to effectively communicate with the emergency site, as well as external agencies.

- **Inclusive configuration.** Configuration of the EOC should permit and enhance dialogue or interaction among EOC members.

- **Proximity of like agencies.** Agencies with similar practices, resources or interests (such as fire and police) should be located next to each other to aid rapid and frequent contact.

- **Proximity to support resources.** The EOC organisation must have sufficient administrative support and should be easily accessible to support staff

- **Comfort.** The EOC should be a comfortable facility with temperature controls, adequate lighting, comfortable furniture (chairs and tables) and washroom facilities.

Components

The layout of an EOC is generally driven by the space (location, size, configuration) made available. Listed below are a number of typical space requirements .Where there are limited resources, however, a municipality may be forced to satisfy these requirements from one large room (Figure 5). EOCs should ideally include the following rooms or "space allocations":

- **Main EOC room** is where the representatives of the EOC control are located and contains a variety of visual aids such as: status boards, various maps/charts, phones, hand-held radios, television monitor(s), facsimile phone(s), or a photocopier.

- **Meeting/conference room.** There is tremendous value to the presence of a separate room that is designated as a meeting or conference room.

- **Telecommunications/radio room.** The EOC should have close control over its communication resources. Moreover, it should have back-up resources on hand. Therefore, consideration should be given to placing one or more Ham radio operators near the EOC main room.

- **Media briefing area.** A media briefing area (room, trailer, tent) needs to be located away from the EOC.

- **Public and media inquiry room (PMIR).** The PMIR should be near to but separate from the EOC main room and requires a battery of phones and operators.

- **Administrative/resource room.** This is the workspace of the EOC support staff and location of administrative resources including the photocopier and facsimile.

- **Sleeping quarters.** EOC members should have a space where they could, if necessary, catch a brief rest.

- **Washrooms.** The EOC must be well equipped with "Staff Only" washroom facilities that are nearby and, where possible, include showers and changing rooms.

- **Parking.** Parking space is necessary for those who occupy the EOC as well as for designated visitors.
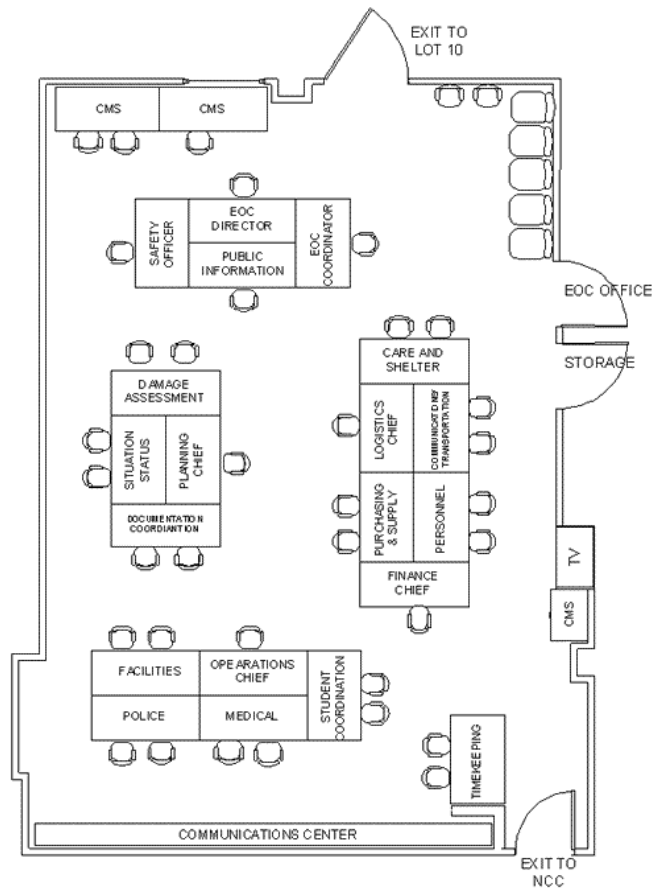
Figure 5: Sample EOC layout

Source: Figure adapted by Wayne Dauphinee from various public domain sources.

Key roles and functions

The operations of a municipal EOC depend upon many individuals. Key among them, of course, are the members of the EOC control Group. While the titles may change from one jurisdiction to another, the following positions or functions are often included:

- City manager, town clerk or another municipal administrator. (This person is usually the one in charge of the operations of the municipal EOC).

- Municipal emergency measures co-ordinator (sometimes referred to as the director of disaster services).

- Heads/chiefs of key municipal departments (such as, fire, police, emergency medical services, transportation, public works, social services).

- Heads of key municipal boards (for example, schools).

- Municipal emergency public information officer (where one exists).

- The chief financial officer for the municipality.

- Key specialists.

- Representatives of industry or other orders of government whose inclusion, when necessary, in the EOC control group may be temporary or permanent depending on the situation.

EOC operations: process and tips for success

The municipal EOC should be activated as soon as it becomes apparent that the situation at the emergency site is overwhelming existing resources and procedures. The EOC should continue in operation only for as long as the situation warrants it and be deactivated (closed-down) as soon as possible thereafter.

While it is operational, the municipal EOC must be made secure from intrusion or interruption by anyone not directly related to the response effort. The EOC should be staffed and operational continuously (24 hours a day, seven days a week).

Operations longer than one day should result in EOC members working in shifts to permit continuity while not over-extending EOC personnel. As noted earlier, EOC effectiveness is heavily dependent upon its ability to effectively maintain communications with a host of agencies, especially those at the emergency site. Therefore, EOC demands the immediate activation of all available communication resources. It also necessitates the beginning of the long and difficult task of information gathering, analysis, processing and distribution. The process must be well managed despite the apparent lack of solid information and the chaos inherent to disasters.

Resource management

Urban search and rescue equipment

Search and rescue equipment could be available in the stores, in the safe custody of the emergency operations centre, or with different agencies or organisations depending upon the size of the equipment and numbers required. For example, cranes may be available from construction agencies or builders and could be arranged from them at the time of emergencies or mobilised by the emergency response team/emergency operation centre during the warning phase. Similarly, depending upon the size of the equipment, it could be available in mobile vans with trailers that are normally self-sufficient for a certain number of hours.

Each operational team may be issued a portable radio and search-trained dogs are definitely desirable.

Alternative communication systems

A communication emergency exists when a critical communication system failure puts the public at risk. A variety of circumstances can overload or damage critical day-to-day communication systems – such as a storm that knocks down telephone lines or radio towers; a massive increase in the use of a communication system that causes it to become overloaded; or the failure of a key component in a system that has widespread consequences.

Violent storms and earthquakes can knock down communication facilities. Critical facilities can also be damaged under "normal" circumstances, for example, underground cables are dug up, fires occur in telephone equipment buildings, or a car crash knocks down a key telephone pole. Hospital or telephone systems can fail.

Unlike general amateur radio activities, which involve primarily amateur radio operators, emergency communication involves both amateurs and non-amateurs. Unlike regular activities, emergency operations happen in real time. Important activities cannot be delayed for convenience. Depending on the situation, operators and equipment might be needed at an emergency operations centre (EOC) or to set up one in field locations, or both.

The emergency communication volunteer should know the pros and cons of using alternate communication systems. This section discusses a variety of communication options that do not depend on amateur radio, and some circumstances where they might be used.

There are times when a means of communication other than amateur radio might be appropriate. It is important to remember that the emergency communication volunteer's job is to communicate regardless of the medium. Here are some possible situations:

- Communication takes place with non-ham radio volunteers or emergency management personnel.

- Transmission of sensitive or lengthy information is needed.

- Communication with the public is needed.

- Amateur radio equipment has failed or is not available.

- Interference is blocking use of amateur radio frequencies.

Use of the communication system would be based on the need of the hour and the frequency available within the constraints of licensing of the wireless equipment for emergency use. Some high frequency and low frequency systems that are useful during emergencies to establish voice communication are listed below.

Other radio services

- General Mobile Radio Service (GMRS)
- Family Radio Service (FRS)
- Citizen's Band (CB)
- Public Safety Radio.

Amateur radio may not always be the best or only means of communicating. It is important to remember that their job is to get the message through, regardless of the means. Plan to have other systems licensed and in place beforehand when possible. Improvise when necessary.

Non-radio communication:

- mobile and PCS phones
- landlines
- couriers.

Activity 5.4

Activity

Complete **two** of the four questions listed below. Share the results with your mentor.

1. Suggest four uses for alternate communication systems beyond those discussed here.

2. List the advantages and disadvantages for emergency communication work of the following modes:
   a. GMRS
   b. FRS
   c. CB
   d. MURS.

3. List the advantages and disadvantages for emergency communication work of the following modes:
   a. Mobile phones
   b. Landlines
   c. Couriers.

4. What other mode of communication can you think would be best suited to your situation? Give examples of its effectiveness.

Unit summary

Summary

In this unit we covered the role and key functions of an EOC, the principles of EOC layout and functioning and the criticality of emergency resource management.

You will not only be able to describe a typical EOC concept of operations but establish a basic EOC for your organisation.

In the next unit we will discuss the immediate activities required once a disaster occurs.

Unit 14

Immediate post disaster response

Introduction

In this unit we will cover the dynamics of post-disaster response, including rapid assessment, resource management and communication. We will also look at the complexities of impact assessment including damage, property, social and resource. This unit also covers communication and the critical nature of urban search and rescue.

Upon completion of the unit you will be able to:

Outcomes

- *state and apply* the dynamics of post-disaster response, including rapid assessment, resource management and communication

- *identify* the complexities of post-disaster impact assessment, including damage, property, social and resource

- *explain* the subtleties of urban search and rescue.

Terminology

Terminology

Consequence management	Involves measures to alleviate the damage, loss, hardship or suffering caused by emergencies. It includes measures to restore essential government services, protect public health and safety, and provide emergency relief to affected governments, businesses and individuals.
Crisis management	Measures to identify, acquire and plan the use of resources needed to anticipate, prevent and/or resolve a threat or act of terrorism.
Disaster	A serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the affected community's coping capacity (UN, 1992). Disasters are usually larger in scale than emergencies.
Incident	An occurrence, either human-caused or by natural phenomena, that requires action by emergency service personnel to prevent or minimise loss of life or damage to property and/or natural

resources.

Response | Activities to address the immediate and short-term effects of an emergency or disaster. Response includes immediate actions to save lives, protect property and meet basic human needs.

Hazard assessment

What type of incident was it?

What took place? Was it an earthquake or a flood? In many cases, what happened is perfectly clear. In other situations, callers may be unable to explain exactly what happened.

"I don't know what happened, but a car is sitting on top of my house."

If you are able to give a name to what happened, it will help others assess what resources are needed. For example, "An aircraft just crashed" reveals more information than "I just heard a huge crash".

If a company employee placed a call to the fire department, which of the following messages would be of greater benefit?

"A tank fell in the loading bay and gas is hissing all over the place."

or

"A tank with a green placard with the number two on it fell in the loading bay and gas is escaping with a hissing sound."

The second statement will identify the type of gas to the fire department; it lets them know that this gas is non-flammable, non-poisonous and non-corrosive.

The better the description, the better the responding agencies can determine if there is an additional or continuing threat. If fire-fighters know they are dealing with a gas, for example, they can respond most effectively if they know if it is poisonous or non-poisonous.

Your plan should include a guide or checklist for people who are likely to receive information about a disaster. This guide should prompt them to ask sufficient questions and get relevant information about the caller so they can verify the information.

Impact assessment

Rapid impact assessment

Little research focuses on what takes place during the impact phase of a disaster. For many disasters, such as tornadoes, hazardous material spills and landslides, the moment of impact lasts for seconds or minutes. For

disasters such as floods, drought and forest fires, the phases flow together; the edges are blurred between the impact phase, the warning and alert phase and the immediate post-impact phase.

Many disasters with long warning times make it unclear when the disaster is "really there". In other types of disasters, it is difficult to know when the disaster's impacts are "really over". Earthquake aftershocks or floodwaters repeatedly rising and receding make communities unsure as to whether they can start cleaning up, or should again seek safety.

When you are directly affected by a disaster, you will know it. In some cases, it is simple to determine the start of the impact phase. Flight 1353 crashed at 0742 hours; at 1704 hours, an earthquake of 7.3 magnitude struck; approximately 20 minutes ago, the train derailed. However, the moment the impact affects you does not necessarily signal the beginning of the impact phase. In some emergencies, it is not easy to discern the beginning of the impact phase.

In many disasters, the impact phase is relatively short. This is the moment that validates **the time and effort** put into implementing mitigation strategies. First aid training, CPR, and earthquake and fire drills will save lives and prevent serious injuries. Seismic safety practices for structural (for example, buildings) and non-structural (for example, bookshelves) items, storm cellars and secure chemical storage will reduce the risk of harm. However, to be effective, these measures must be **implemented before** the impact occurs.

Although the effects of the impact may be felt for a long time, the impact phase is the period when lives and property are still under threat. Once people become aware of the seriousness of the situation, they rapidly assess the situation. This is the immediate post-disaster impact phase.

Immediate post-disaster impact assessment

What do people do after a disaster? The answer should not be surprising. They continue to cope as they did before the disaster; they take action and they are altruistic. With today's satellite communications, people living thousands of kilometres away may find out about a localised disaster before the residents are even aware of an event, or the extent of its effects.

The immediate post-impact phase is, for the most part, a time of quick assessment. As those immediately affected realise something has happened, they check their own safety, then turn to help those around them. As first response agencies begin to receive information, they start to organise the data to determine the scope and magnitude of the incident.

The post-impact phase is for action. Most people respond quickly when they see someone in trouble, requesting assistance when it is beyond their abilities. How the information in the request for assistance is interpreted in turn determines the quantity and type of resources dispatched to the incident.

In order to be well organised and effective in response, the rapid impact assessment of the aftermath has to be made in order to take some key

decisions. It is also necessary that key facts be determined when receiving and interpreting information. These include:

- **impact assessment** – type and scope
- **personal assessment** – yourself and others
- **property assessment** – structural and non-structural
- **resource assessment** – personnel and equipment.

Damage assessment

What is the impact area?

What area was affected by the incident? Is the impact confined to a small site, or can damage be seen in all directions? One of the many problems that arise in a disaster is that it is often very difficult to determine the affected areas.

Some hazards, such as tornadoes, may hit several areas within a very short time. Emergency response agencies may head out to the first area hit, while other areas that have lost communications receive no immediate assistance, even though they may be in worse condition. Hazards with discernible impact patterns should be analysed so high-risk areas can be checked even if requests for help are not received.

Your vulnerability assessment will determine which areas under your jurisdiction are the most vulnerable to certain disasters. The emergency response plan should contain a list of the vulnerable areas that should be checked for damage, as soon as the hazard has been identified.

If the damage has occurred over a widespread area, it may be some time until the extent of the disaster is finally pieced together by combining the damage reports.

How can the impact area be accessed?

Once you have determined the area of impact, it is important to note both access and egress routes. How are the injured and others going to be evacuated? Are roads or stairwells blocked?

Again, your company's vulnerability analysis will indicate areas most susceptible to damage. Your plan should include methods of access to those areas and alternative routes in case primary routes are impassable.

Social assessment

Social assessment focuses on the following five areas:

Personal safety

Immediately after the impact, the first thing you must do is check yourself for harm. In the ensuing shock, people often rush in to help others without realising that they themselves have been hurt.

Safety of responders

As soon as you have checked yourself, make sure that responders will not be placed at risk before calling for assistance.

Number of injured and extent of injuries

How many people need assistance? In many cases, the chaos after an impact leads people to assume the situation is much worse than it appears.

Your emergency plan should include the approximate numbers of people located in each area. That way, if someone receives a call that indicates a particular area has been devastated, requests for help can indicate the numbers of staff potentially needing assistance and the quantity of relief and material needed.

Number threatened

Is there still a risk of threat to the affected population? Is the river still rising? Are aftershocks to be expected? Will the wind direction change? Both the type of hazard and the prevailing circumstances need to be carefully examined to determine if there is a continued or added threat.

Are more people now at risk? How many people are directly affected by the threat? Is the risk so great that people should be evacuated? Ordering an evacuation is a serious decision with economic implications and should not be made lightly. Furthermore, people may be injured during an evacuation. Nevertheless, in case of your own company employees should never be left in a potentially dangerous situation.

Number of dead

While it is upsetting to see dead people, removing them should take lower priority than treating the injured. At this point, nothing more can be done for the dead and it is a waste of resources to have personnel dealing with them when they are needed to help save the injured.

In many disasters, large numbers of ambulances and other emergency personnel are summoned to a situation where most of the people are dead and only a few actually need emergency care. As a result, people not involved with the incident do not receive the medical attention they desperately need (for example, heart attack victims), and the emergency vehicles at the site are an impediment to access.

Property assessment

The primary concern is always for people – **people come first, property second.** Once the people have been looked after, concern focuses on property.

Is there any structural damage?

Are buildings damaged? If so, how badly are they damaged? Is it safe to enter the building? Can business operations resume in the same

structure? In many cases it may be some time before answers to these questions are available.

The plan should include information on the most susceptible buildings. Once the hazard is known, the vulnerability analysis should indicate which buildings need to be checked first. Publications such as *Rapid Visual Screening of Buildings for Potential Seismic Hazards* (United States Federal Emergency Management Agency) discuss how to determine building safety after an earthquake.

Who is going to assess the building for an organisation or an area? If structural engineers are employed, the problem may be easily solved; if not, they may wish to draw up a service agreement with an engineering firm. The emergency operations centre (EOC) for the company should have a complete map of all of the company's buildings. As each damage report comes in, the results can be added to the map.

Is there non-structural damage?

The same issues must be addressed in assessing non-structural damage. Are windows broken? Light fixtures still attached? Are vehicles safe? Can employees return to work? What repairs have to be done? What equipment needs to be replaced?

The people who do the assessment may not be familiar with the equipment in the office. The plans should include a list of the most essential equipment and its location on the floor plan. Each item can be located and checked off on the list and its condition recorded.

Resource assessment

As information is received about the status of people and properties, the next assessment to be carried out determines the resources needed to assist those who need help. The resources needed to repair buildings and contents should be determined after people have been cared for. Clearly, search and rescue operations necessitate serving both considerations simultaneously.

Personnel

If people are injured, emergency medical personnel are needed. Onsite first aid attendants, paramedics, doctors and ambulance attendants may all be required. If buildings need to be searched, search and rescue volunteers are needed. Building inspectors, plumbers, fire-fighters and other personnel may be required.

The vulnerability analysis should indicate the types of personnel needed and the emergency plan should list where these individuals are and how they can be contacted.

Equipment

What equipment is likely to be needed? Locations of fire hoses and other fire fighting equipment should be marked on company maps. Likewise, first aid equipment and other necessary equipment should also be indicated.

The vulnerability assessment should indicate if particular equipment is likely to be damaged and where replacements or replacement parts can be located. Perhaps special equipment is needed for search and rescue. How might it be obtained?

Fuel may be needed to run emergency generators. In a company affected by the hazard, staff may be unable to return home and may need food, water and blankets. How would your company provide these items?

Communications and control

What is the condition of the communications equipment?

Are the telephone systems operable? Are other systems functioning? Is the computer system working? If not, what can your company do to have the system returned to working order?

The emergency plan provides for alternative means of communication. Effective and efficient casualty and damage assessment and resource allocation provide the EOC with some of its greatest challenges. Gathering and disseminating accurate and timely information is the other major challenge.

Although at the start of a disaster it may seem you do not have the information you need, the data accumulates very quickly. The problem then becomes sorting out what is accurate and relevant and what needs to be communicated.

Who is a source of information?

Any information you receive should be recorded in a logbook, with the source and time noted. Any time information is requested, you should ask yourself who is the best source for that information. Then ask yourself if you are the best person to answer the **request.** If decision-makers spend their time trying to answer questions they don't have the answers to, they won't be able to focus on the work they are supposed to be doing. If the plan clearly outlines who is responsible for what, the decision-makers will know who to ask when they need information.

Why is the information needed?

Why does someone **want** to know something? Before answering questions, make sure there is a legitimate need for release of the information and that the person asking is entitled to know.

Why does someone **need** to know something? Don't give out information unless it is relevant to the issue. People quickly become saturated with irrelevant information. If you are passing on information to someone, make sure you ask why that information is needed.

Does the content of the information actually provide them with what they need to know, or does it present them with further problems without solutions? For example, if you are planning to evacuate people from an area, they need to know why they are being evacuated, how quickly they need to leave the area, where they are supposed to be going and when they can return.

How can information be disseminated?

How will people be informed? Will they be told by telephone, by a public address system, or by radio? Will the method of communication reach the target audience? Is the medium available and operational? Is there any language problem?

It is important to get the right spokesperson for the message. Use the highest level of authority to get the message across. If you use a company official who is too low in the corporate structure, the message may not be acted upon. However, if the official is too high in the corporate structure, the message may be taken more seriously than intended.

What communications are needed?

What communications does the EOC have and how can other facilities link to the EOC so that information can be received and instructions issued? The means of transmitting messages and acknowledging receipt of information should be outlined in the plan.

Equipment

What equipment is likely to be needed? Locations of fire hoses and other fire fighting equipment should be marked on company maps. Likewise, first aid equipment and other necessary equipment should also be indicated.

The vulnerability assessment should indicate if particular equipment is likely to be damaged and where replacements or replacement parts can be located. Perhaps special equipment is needed for search and rescue. How long will it take to obtain?

Fuel may be needed to run emergency generators; staff may be unable to return home and may need food, water and blankets. How would your agency provide these items?

Search and rescue (SAR)

The foremost action after the disaster is search and rescue (SAR), once there is a rapid assessment of loss. Essentially, SAR is the act of searching for, rescuing and/or recovering any person(s) who is lost, injured or killed due to a disaster. The act may be by means of ground, air or marine activity.

The activities involved in SAR missions are strategy, tactics and operations for locating, providing medical assistance/treatment and evacuation of trapped victims from the collapsed structures. These activities may require basic, light, medium or heavy levels of operation. Most post-disaster victims needing attention are the injured and caught in non-structural entrapment. Around 15 to 20 per cent are those entrapped in void spaces with 5 per cent caught under heavy structural elements.

Normally, rescue operations are executed by the SAR teams and assisted by the disaster mitigation teams, heavy and light duty rescue teams and volunteers. The emergency plan should have a rescue and response team

identified from within the company/industry, local government and non-government organisations.

The team is essentially composed of safety trained personnel in-house, that is, within the company/industry. Community task forces potentially have personnel from fire and security departments as part of the team. A company needs representatives from union, finance and administration departments along with a first aid attendant. Representatives from the corporate planning and public relations departments are also useful. The type of business or industry decides the other team members. However, the task force needs to be as small as possible to ease decision-making while attending frequent meetings.

Therefore, the task force must be quick-witted and well-trained on all the aspects of the disaster, as well as familiar with the situation and environment. Normally, co-ordination of the SAR is undertaken by the emergency operation centre in collaboration with first responder agencies.

Dos and don'ts during the rescue operation

Before starting any urban rescue, proper personal protection equipment must be worn and used at all times. Without personal protection, the rescuers will become a severe liability at the scene. A rescuer's only defence from a hostile environment is their personal protection equipment. This equipment must be kept with the rescuer at all times, no matter what.

The minimum personal protection gear includes:

- hard hat – preferably a climbing/rescue helmet

- safety goggles – will be worn for long periods, must be comfortable

- work gloves – at least double leather

- dust mask – preferably cartridge type respirator

- sturdy boots – must provide ankle support

- overalls – good quality to provide another protection barrier

- whistle – for reliable communication of distress

- duct tape – for securing hazards and everything else imaginable

- First Aid kit – compact kit with large pressure dressing, minor wound care, disposable resuscitation shield and so on

- torch – good quality with lots of batteries and spare bulbs; and

- flagging tape–- marking routes, hazards and so on.

Apart from the personal protection equipment, there are some basic rules of conduct when structures collapse, though not as replacements for sound rescue knowledge and competent training. Additional information on urban SAR can be found in the *Canadian Urban Search and Rescue (USAR) Classification Guide,* Public Safety Canada

Activity 5.5

Activity

Complete the following scenario:

There is a sudden blast heard in the settlement in the vicinity. No one knows what happened. You are a trained member of the rescue team. You are living in the neighbourhood and would be the first responder.

Consider actions you would take in light of the situation.

List the actions in terms of priority.

Unit summary

Summary

In this unit we have covered the dynamics of post-disaster response, including rapid assessment, resource management and communication, the complexities of impact assessment, including damage, property, social and resource and the critical nature of urban search and rescue.

Module 6 will address post-disaster relief and recovery.

Activity answers

Activity 5.1

Answers will vary by location.

Activity 5.2

1. d.
2. b.
3. a.
4. c.
5. d.

Activity 5.3

Answers will vary by location.

Activity 5.4

Answers will vary by location.

Activity 5.5

Answers will vary by location.

References

References

Emergency Response Coordination Roles in Large-Scale Disasters.
http://www.fema.gov

ICS Resource Center FEMA Emergency Management Institute.
http://training.fema.gov/EMIWeb/IS/ICSResource/index.htm

Kuban, R. Ph.D., *The Emergency Site Management (ESM) System: A doctrine paper,* Pegasus Emergency Management Consortium Corp.

Further reading

Reading

Are you Ready?: Evacuation. Federal Emergency Management Agency. http://www.fema.gov 25/07/201009/09/201309/09/2013 4:38 PM

Communication Systems. Available at: https://admin.qsl.net/index.php

Incident Command System Flowchart. (May 1999*). Dispatch Monthly Magazine*. (found in your Additional Readings booklet).

Web resources

Clallam County Sheriff's Search and Rescue
http://www.olypen.com/ccsosarp/

Contingency Planning & Management
http://www.contingencyplanning.com

Emergency Information Management and Telecommunications
http://www.undmtp.org/english/telecoms/telecoms.pdf

Florida Division of Emergency Management
http://www.floridadisaster.org/

Incident Command System (ICS) Overview for Executives/Senior Officials and Download Materials
http://training.fema.gov/STCourses/crsdesc_spec.asp?courseid=G402

IS-100.a Introduction to Incident Command System, ICS-100, Federal Emergency Management Agency (FEMA)
http://training.fema.gov/EMIWeb/IS/is100a.asp

New York State Incident Command System
http://www.semo.state.ny.us//programs/training/ICS/ICSexplain.cfm

Search and Rescue Society of British Columbia

http://www.sarbc.org

Urban Search and Rescue (USAR) Classification Guide
http://www.publicsafety.gc.ca/prg/em/usar/usar-guide-eng.aspx

Useful resources and tools

Developing Early Warning Systems: A Checklist, UN/ISDR. 2006. Developed as an outcome of the Third International Conference on Early Warning (EWC III), 27-29 March 2006, Bonn, Germany. The checklist is an outcome document of the EWC III. It was created in order to help governments and communities implement people-centred early warning systems. The checklist was translated into 19 Indian Ocean country languages.

Disaster Preparedness for Effective Response Guidance and Indicator Package for Implementing Priority Five of the HFA, OCHA 2008. The document contains a list of indicators to support the action of strengthening of Early Warning Systems by governments, civil society and regional organisations.

Early Warning – From concept to action, UN/ISDR, DKKV. 2006. The Conclusions of the Third International Conference on Early Warning Conference held 27-29 March 2006, Bonn, Germany.

IGAD Climate Prediction and Applications Centre (ICPAC). The Nairobi-based organisation for the Horn of Africa countries of Intergovernmental Authority on Development.

International Center on Research El Niño (CIFEN). CIFEN promotes, complements and starts scientific and application research projects necessary to improve the comprehension and early warning of El Niño events.

Global Fire Monitoring Center (GFMC) for Early Warning of Wildland Fire. Global, regional and national fire weather and climate forecasts, as well as background materials.

Global Information and Early Warning Service (GIEWS). GIEWS, operated by the FAO, continuously reviews the world food supply/demand situation and issues reports on the world food situation.

Global Survey of Early Warning Systems: An assessment of capacities, gaps and opportunities toward building a comprehensive global early warning system for all natural hazards, UN/ISDR, United Nations publication, 2006.

HEWSweb. HEWSweb service has dedicated pages for each type of hazard including drought, floods, storms, locusts, volcanoes, earthquakes, weather, El Niño and other hazards and socio-political developments.

Platform for the Promotion of Early Warning. The Platform for the Promotion of Early Warning, advocates for better early warning systems, especially in development assistance policy and programmes. It collects and disseminates information on best practices, and stimulates

cooperation among early warning actors and the development of new ways to improve early warning systems.

Severe Weather Information Centre. This World Meteorological Organization (WMO) web site provides a single and centralised source for the media to access official warnings and information issued by National Meteorological and Hydrological Services.

UN ISDR Terminology on Disaster Risk Reduction (2009). This UN International Strategy for Disaster Risk Reduction publication aims to promote common understanding and common usage of disaster risk reduction concepts and to assist the disaster risk reduction efforts of authorities, practitioners and the public.

ReliefWeb Glossary of Humanitarian Terms. The terms and definitions in this glossary 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.

Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. The framework was adopted at the 2005 World Conference on Disaster Reduction held in Kobe, Hyogo, Japan. The Conference provided a unique opportunity to promote a strategic and systematic approach to reducing vulnerabilities1 and risks to hazards. It underscored the need for, and identified ways of, building the resilience of nations and communities to disasters.