

Management of Marine Environment

ENVS 590

Instructor

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Contingency Planning

- Background
- Elements of Contingency Planning
 - Information gathering
 - Strategy development
 - Operational plan

Marine Pollution Management

Important Considerations for Marine Protection should cover:

- Environmental Impact Assessments (EIA) are conducted and implemented for all new and modified marine projects.
- Environmental Management Systems (EMS) are developed and practiced for operating marine facilities.
- Contingency Plans (Emergency Preparedness Plans) are available at marine facilities/activities for all credible emergency scenarios.

Contingency Planning for marine emergencies

Definition:

Contingency Plan (CP): is a response plan specially developed for individual emergency scenario (e.g oil spill, fire, ..etc) which is envisioned to occur at a particular facility/area.

The Need and Benefits

- **The Need**

- Legislative
- Organization policy

- **The Benefits**

- Expedites efficient & effective emergency response.
- Mitigates environmental damage
- Insures confidence in managing risks
- Assists with good media relations and image

Contingency Planning for Oil Spill on Water

Main Elements of Contingency Planning

Information gathering

Detailed processes examining risk and sensitivities.

Strategy development

Processes utilizing gathered information to establish priorities for protection and strategy choices.

Operational plan

A response tool facilitating efficient and effective use of resources.

Contingency Planning Process

Information gathering

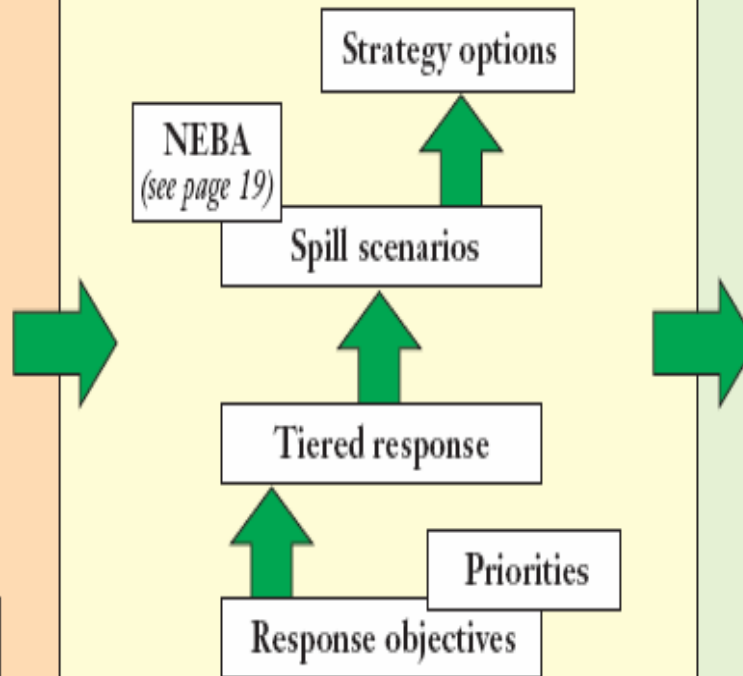
Risk assessment

- oil properties
- current and wind data
- sea conditions
- movements and fate
- historic data

Environment at risk

- ecological
- industrial
- amenity
- sensitivity maps

Strategy development



Operational plan

Organization

Responsibilities

Communication

- reporting
- assessment
- mobilization
- documentation

Resources

Waste plan

Review

Updating

Liaison, training, exercising and updating are essential

NEBA: Net Environmental Benefit Analysis

Information Gathering

Risk Assessment of oil spill

- **Spill Source and volume**
- **Oil properties**
- **Oil Movement**
 - Tides / currents
 - Wind
 - Seasonal variations
 - Sea conditions
- **Fate of oil**
 - Oil type & characteristics
 - Environmental conditions
- **Historic data**
 - Spill size
 - Frequency

Influence of current and wind

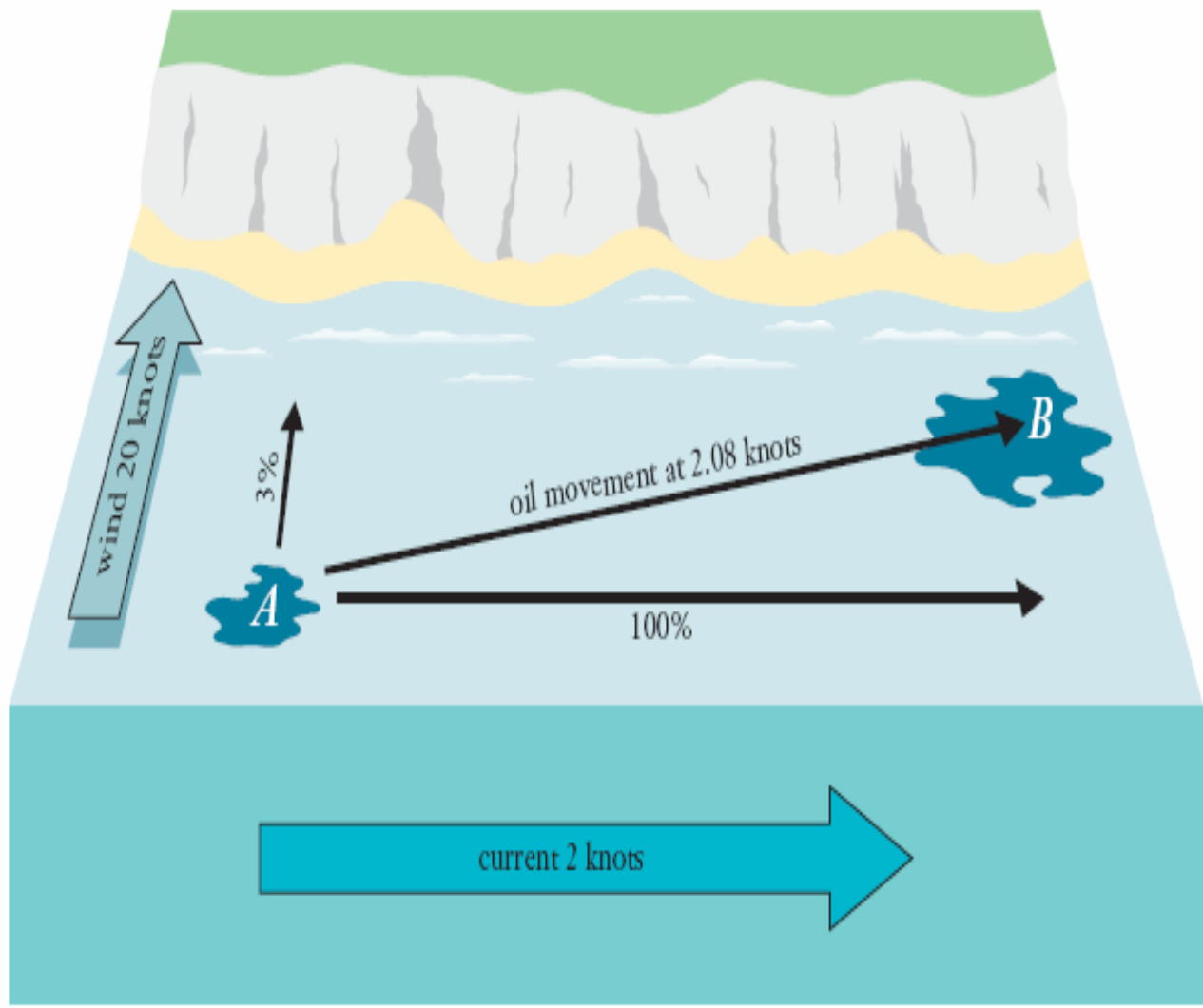


Figure 6
The influence of 3 per cent of the wind speed combined with 100 per cent of the current speed results in the movement of oil from A to B.

Environment at Risk

- Ecologically sensitive habitats & species
- Industrial sea water intakes
- Fisheries and aquaculture
- Amenity areas
- Coastal sensitivity maps very useful

Coastal Sensitive Areas

Ecological: coral reefs; saltmarshes; estuaries; fish spawning areas; bird breeding/feeding and roosting areas; mangrove stands; seagrass beds

Recreational: tourist areas; bathing beaches; marinas; watersports

Commercial: water intakes; shipyards/ports; fish farms; other mariculture

Strategy Deployment

Priorities for Protection

- **Inability to protect all resources**
- **Who has responsibility to allocate priorities?**
- **Take account of:**
 - Degree of sensitivity
 - Ability to protect
 - Seasonal variations

GCC Marine Priorities

- Desalination & cooling inlets.
- Marine protected areas (MPA's) and sanctuaries
- Aquacultures and fisheries
- Amenity beaches

Tiered Response Concept

large spill	3	3	Tier three
medium spill	2	Tier two	3
small spill	Tier one	2	2
	local	vicinity	remote
	proximity to operations		

Tiered Response Definitions

- Tier 1: Small local spills that may occur at or near the facility, in which could be controlled using facility resources.
- Tier 2: Medium spill that may be local or at some distance from the facility, in which outside resources are needed to control it.
- Tier 3: Large spill which exceed national boundaries and require national and international resources to control it.

Spill scenarios

- Various credible scenarios should be considered

Examples:

- Offshore pipeline leakage
- Loading/discharging at marine facility
- Oil tankers collisions and groundings
- Offshore wells incidents
- Fires and explosions
- Hull failures

NEBA

- Net Environmental Benefit Analysis : Process for balancing socio-economic benefits and ecological consequences of applying a particular strategy or techniques.
- NEBA provides decision makers proper response options to minimize ecological damage.

Strategy Options

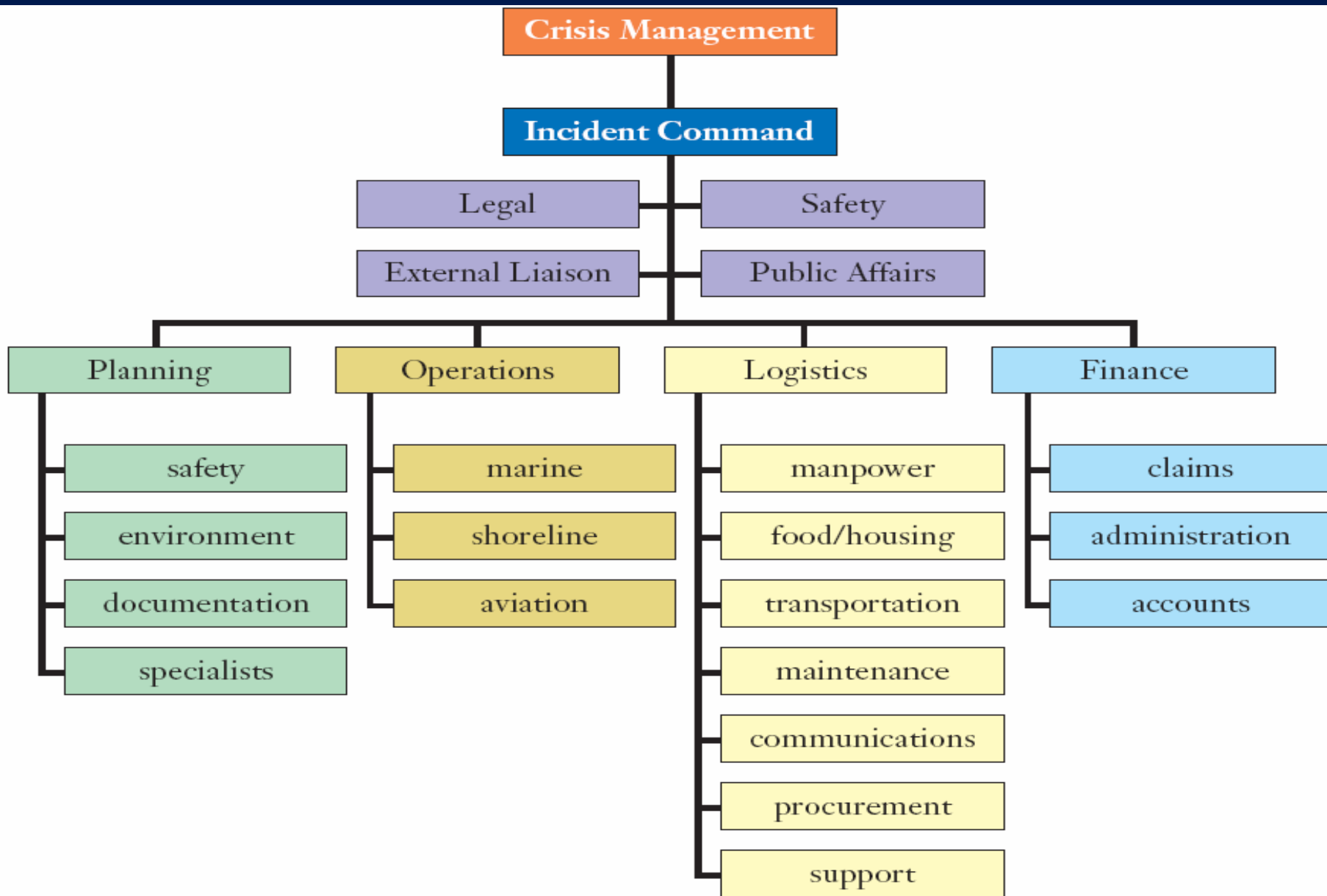
- **Plan type**
 - general or specific
 - level of detail
- **Resources**
 - manpower
 - equipments
- **Techniques**

Operation Plan

Operation Plan

- Organization
- Responsibilities
- Communication
- Resources
- Waste plan
- Review
- Update

Typical response organization



Responsibilities

Function	Responsibilities
Crisis management organization	Ensuring that the response to any incident is consistent with government or company-wide, strategic, operational and communication policy requirements.
Incident Command	<p>Recommending response strategy and setting clear objectives for the response effort (which should eventually include termination criteria).</p> <p>Ensuring overall implementation of field activities, effectiveness and cost of the entire clean-up operation. In many countries this role will fall within government agencies.</p> <p>Ensuring safety considerations are given the highest priority.</p> <p>Requires full operational and financial authority to facilitate rapid mobilization of necessary pollution combating resources.</p>
Safety	Provide specialist safety advice and expertise to Incident Command.
External liaison	In Tier 2 and 3 spills there will be multi-agency involvement and further interest from a wide of range of parties. It is vital that links and communications with these parties are maintained throughout the response. Note that some countries plan their response organization to directly incorporate personnel from all involved groups.
Legal	Provide legal advice and expertise to Incident Command.
Public affairs	Release of information to the news media and wider community on aspects of the spill and its clean-up.
Planning	<p>Recommendations of plans to implement the agreed response strategy, with full input from environmental expertise and other specialists as necessary.</p> <p>Ensure a complete and accurate record of all events is maintained and documented.</p> <p>Implementing a disciplined cycle to assessments, management meetings, decision making and feedback from/to the field operations.</p>
Operations	<p>Safe and effective deployment of field operations, both at sea and on shorelines, with possible involvement of air operations.</p> <p>This group is likely to be the most numerous when shoreline clean-up is undertaken and can involve unskilled labour, requiring close supervision.</p>
Logistics	Support and procurement function. Transporting and maintaining effective personnel and equipment in the field requires close liaison with the planning and operations functions.
Finance	<p>Ensuring costs are monitored and accounted.</p> <p>Ensuring claims and compensation procedures are implemented.</p> <p>Provide administrative support as needed.</p>

Communication

- Reporting
 - Initial notification, interim progress, and termination
- Assessment
 - Assess the situation with time
 - Assess from over flight
 -
- Mobilization
 - Mobilization of equipments, personnel and other response resources
- Documentation
 - Recording all steps during and after emergency including; spill situations, actions taken, and resources utilization.
 - Generate reports

Resources

- Proper equipments
 - Booms
 - Skimmers
 - Absorbents
 - Dispersants
- Trained staff
 - Response organization staff
 - Support and contracting staff
 - Various authorities (coast guard, port authorities and government agencies)

Waste Plan

- Plan that cover suitable options for :
 - Storage
 - Transport
 - Reprocessing or treatment
 - Final disposal



Oil wastes in temporary storage near the shoreline

Review & Update

- Plan should be reviewed periodically
- Plan should be updated
 - after exercises
 - following oil spills
 - periodically to keep contacts current

Contingency planning

- Has there been a realistic assessment of the possible threat, and of the resources most at risk.
- Have protection priorities been agreed including available techniques.
- Have the clean-up and protection strategies been agreed and explained.
- Have the roles and responsibilities of the team been clearly stated
- Are the available resources sufficient and has back up been identified
- Has the waste management issue been clearly identified
- Are the initial alerting and evaluation procedures clear
- Has the communication system been identified.
- Have all aspects of the plan been tested
- Is the plan compatible with plans for adjacent area's and activities