

DISCLAIMER

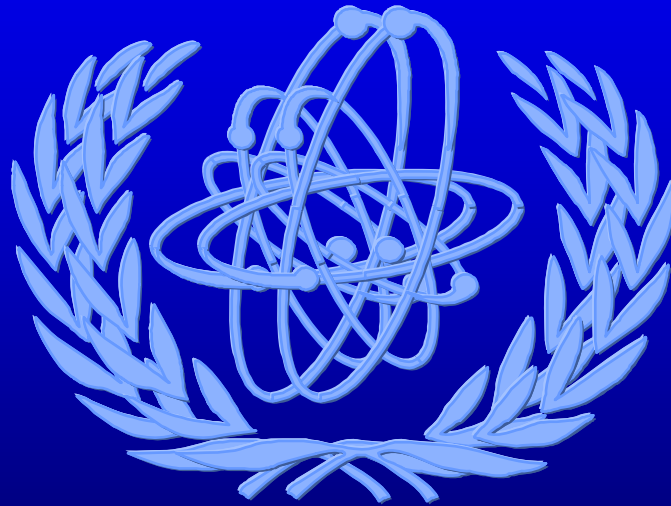
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Radiological Emergencies



Emergency Management

Lecture

Introduction

- Emergency management means **overall strategic management** of emergency response
- Objective of this lecture is to present and explain requirements, concepts and functions of emergency management

Content

- **Requirements for emergency management**
- **Emergency management role**
- **Emergency Manager's tasks**
- **Emergency phase actions**
- **Post-emergency phase actions**
- **Summary**

Why Emergency Management?



Preparedness and Response for a Nuclear or Radiological Emergency

SAFETY REQUIREMENTS **Safety Standards Series No. GS-R-2**

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WHO

Safety Requirements

- Safety requirements are divided into two groups
 - Requirements for response
 - Requirements for preparedness
- Requirements for emergency management represent only one part of a complete set

Response

- **On-site emergency response shall be promptly executed**
- **Off-site emergency response shall be effectively managed**
- **Emergency response shall be coordinated between all responding organizations**
- **Information necessary for making decisions on allocation of resources shall be appraised throughout emergency**
- **Jurisdictions and response organizations that fall within PAZ or UPZ shall coordinate their emergency responses and shall provide mutual support**

Preparedness

- **Transition from normal to emergency operations shall be clearly defined and shall be effectively made without jeopardizing safety**
- **Arrangements shall be made to coordinate emergency responses of all off-site response organizations with on-site response**
- **Arrangements for radiation emergency shall be integrated with arrangements at national and local level for response to conventional emergencies**

Preparedness (1)

- **Arrangements shall be made for implementation of command and control system for response to radiation emergency**
- **Arrangements shall be made for coordinating response to radiation emergency between response organizations and jurisdictions that fall within PAZ or UPZ**

Practical Goals of Emergency Response

- **To take mitigatory action at the scene**
- **To prevent occurrence of deterministic effects**
- **To render first aid and to manage treatment of radiation injuries**
- **To reduce occurrence of stochastic effects in population**
- **To limit occurrence of non-radiological effects**
- **To protect environment and property**
- **To prepare for resumption of normal social and economic activity**



Important Aspects

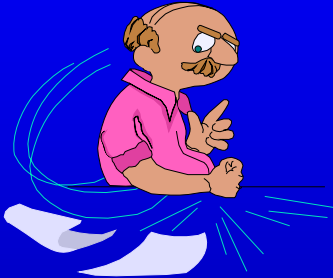
- **Most important aspects of managing radiation emergency**
 - **Ability to promptly and adequately determine actions to protect members of the public and emergency workers**
 - **Ability to take those actions efficiently**



RESPONSE INITIATOR
First official being informed of an emergency with authority to initiate a response plan



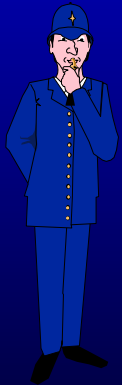
EMERGENCY MANAGER
Appointed official in charge of overall emergency response



ON-SCENE CONTROLLER
Usually senior member of First Responder team



FIRST RESPONDER
First person or team to arrive at the scene of an accident with an official role to play in the accident response



RADIOLOGICAL ASSESSOR
Usually senior member of a radiological assessment team sent to the scene of an accident

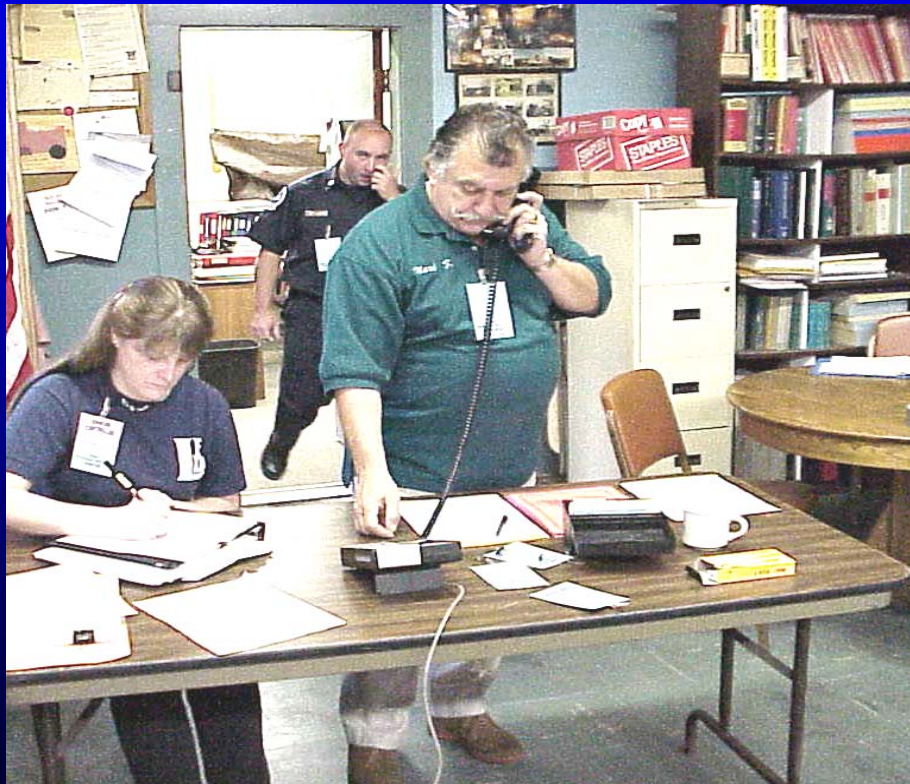


- Police
- Fire service
- Emergency medical responder
- Facility responder

Radiological assessment teams and laboratories

Emergency Manager

- **Emergency Manager is in charge of the overall strategic emergency management**



Role and Functions of the Emergency Manager

- Who is designated as Emergency Manager?
 - Document in the response plan
- Knowledge/skills required
- Operational location



Emergency Manager's Tasks

- Interface with accident scene



Radiological and Non-radiological Hazards

- **Be aware**
 - **Radiation may be just one of the hazards in an accident - most cases non-radiological hazards (e.g., fire, toxic fumes) will dominate**
 - **Radiological assessors will focus on the radiological aspects of the accident**



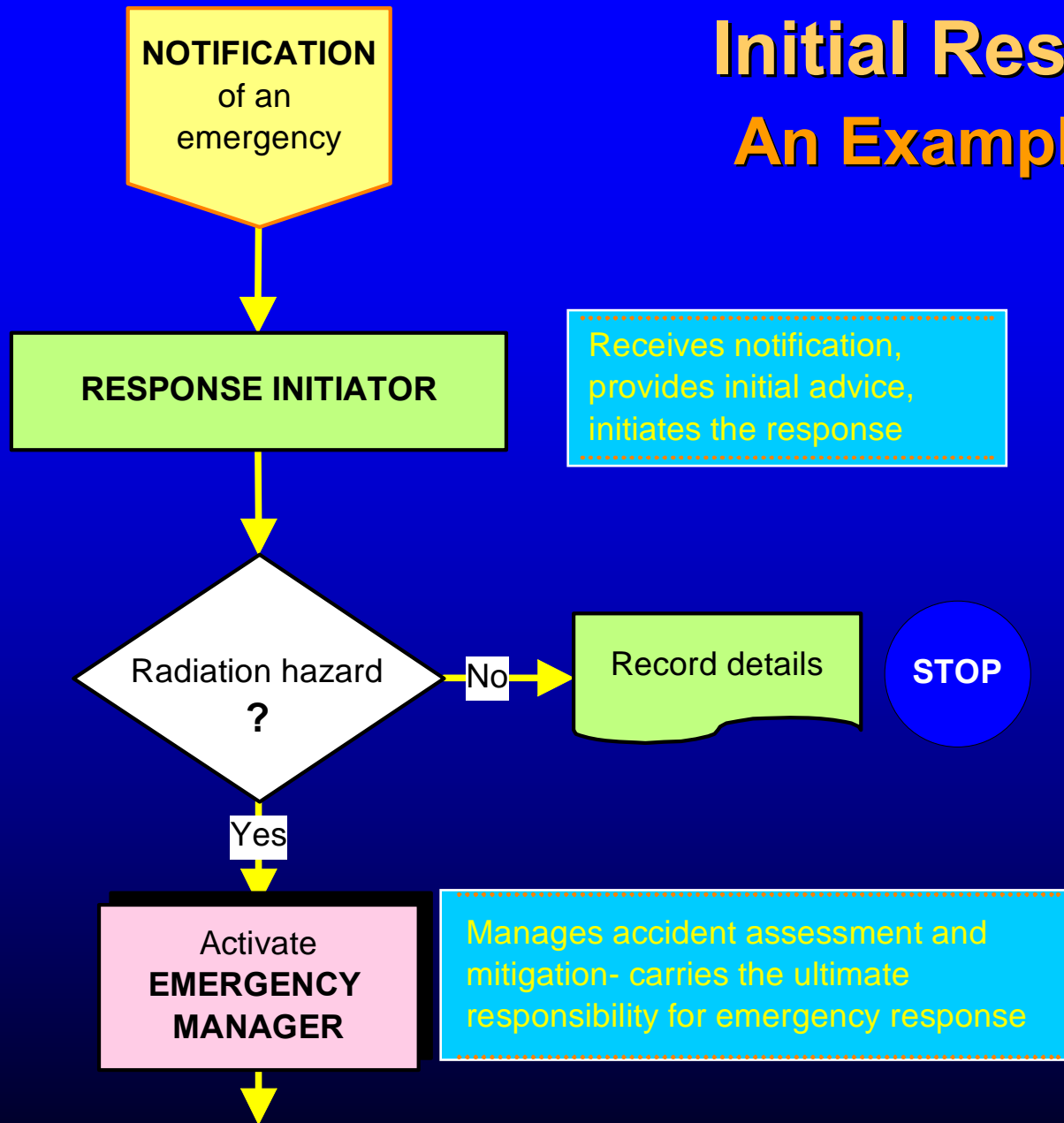
Response Phases

- Emergency Phase
- Post-Emergency Phase

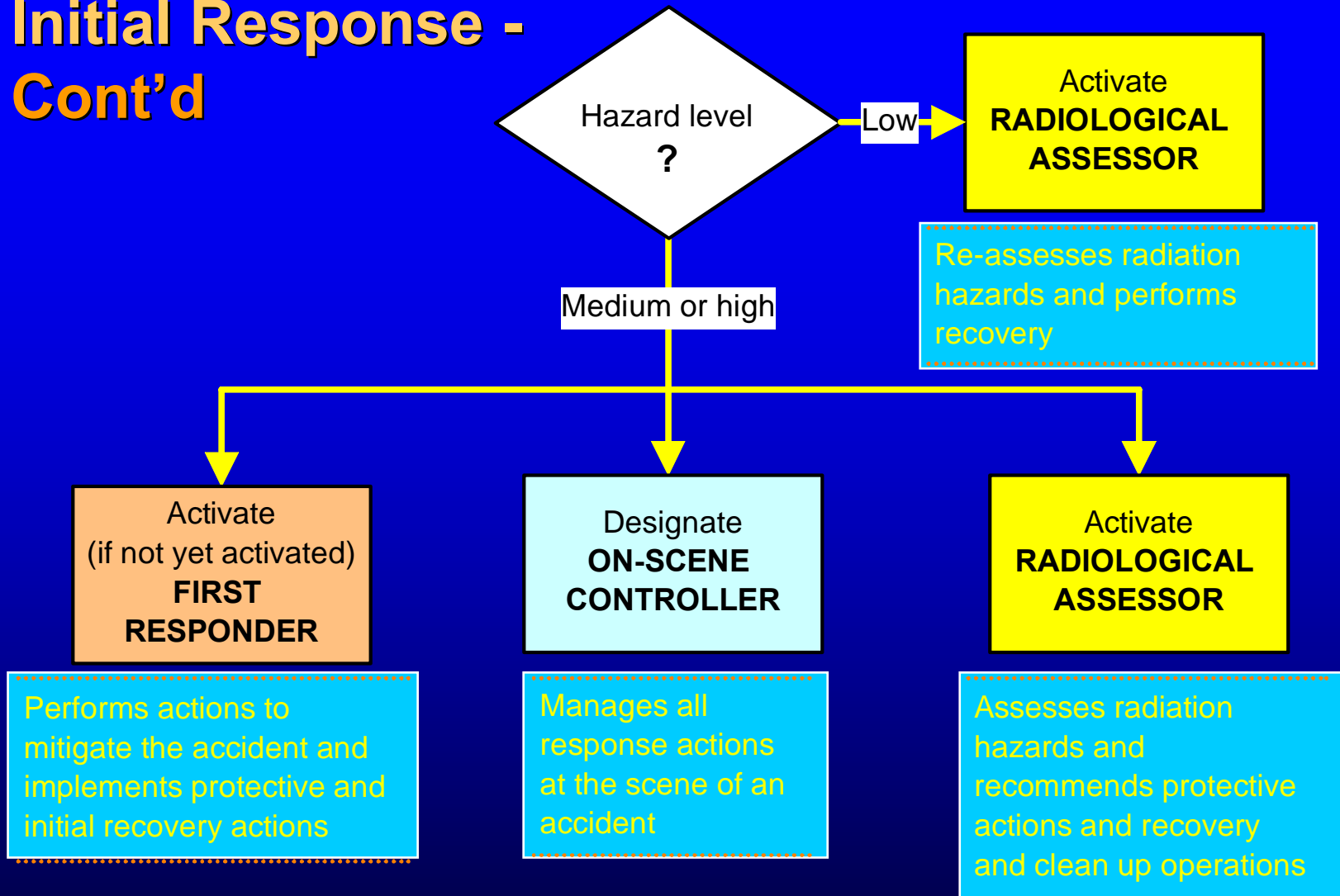


Initial Response

An Example



Initial Response - Cont'd



Emergency Phase

- Obtain briefing from **Response Initiator** or staff on-scene; alert/activate other responders
 - **Initial Information**
 - **Accident Registry Form**
 - **Alerted Emergency Responders Form**



Emergency Phase Actions

- Maintain a Log
 - What was done
 - When was it done
 - Notifications
 - Decisions
- Maintain status boards/displays

A photograph showing a person from behind, writing on a large whiteboard titled "STAFFING CHART". The person is holding a blue marker and a printed document. The whiteboard has a table with columns for "POSITION", "SHIFT 1", and "SHIFT 2". The "POSITION" column lists various roles: SELECTMAN, E.M.D., FIRE CHIEF, POLICE CHIEF, RADEF, TRANSFERENTIAL, TOWN CLERK, TOWN ADMINISTRATOR, HEALTH OFFICER, and ROAD W. The "SHIFT 1" column has handwritten entries "H Low" and "H ZAR".

POSITION	SHIFT 1	SHIFT 2
SELECTMAN	H Low	
E.M.D.	H ZAR	
FIRE CHIEF		
POLICE CHIEF		
RADEF		
TRANSFERENTIAL		
TOWN CLERK		
TOWN ADMINISTRATOR		
HEALTH OFFICER		
ROAD W.		



Emergency Phase Actions

- Assess situation and magnitude of potential radiological problem
 - **Examples:**
 - ❖ Calibration Sources - Low
 - ❖ Well Logging - Medium
 - ❖ Teletherapy - High
 - ❖ Moisture Detectors - ?
 - ❖ Industrial Radiography - ?

HIGH
Medium
LOW



Emergency Phase Actions

- **Identify type of emergency and evaluate necessary main actions**
- **Ensure all personal protection guides and actions are implemented in accordance with Radiological Assessor recommendations**



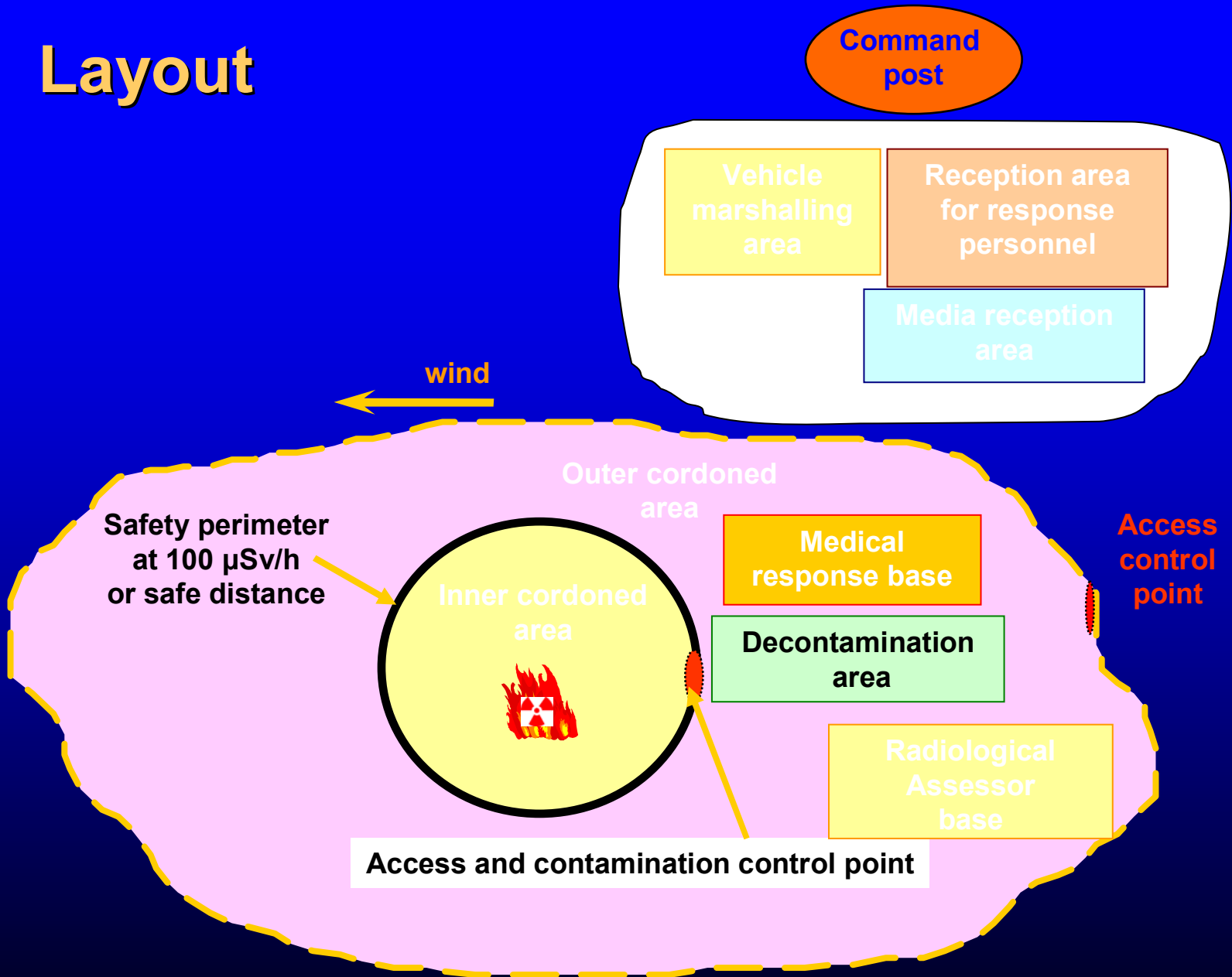
Emergency Phase Actions

Additional Considerations

- Depending on the circumstances of the accident various command and staging facilities will need to be established at or near the scene
- Examples:
 - Command post
 - Reception area for response personnel
 - Vehicle marshalling area
 - Media reception area



Layout



Emergency Radiological Monitoring

- **To obtain the data or information required in an emergency**
 - **Different type of measurements can be performed**
 - **Different physical quantities can be measured**
- **The intended uses of the results should guide the choice of monitoring priorities**



Emergency Phase Actions

- **Ensure on-scene personnel are aware of media response, make media arrangements; appoint press liaison, if necessary**



Additional Considerations

- **Public Information**
- **Media Interest/Response/Relations**



Post Emergency Phase

- **Obtain dose assessment from Radiological Assessor, ensure medical follow-up of persons sent to hospital(s), inform media/public, response organizations that emergency is under control**
- **Ensure all actions, decisions, recommendations are documented, save records**



Post - Emergency Phase Actions

Additional Considerations

DIRECT AND COORDINATE:

- Clean-up
- Waste
- Demobilization
- Radiological Data/Assessment
- Medical Follow up
- Media/public



Post - Emergency Phase Actions

Additional Considerations

- Documentation
- Importance



Post - Emergency Phase Actions

- **Reconstruct the accident, evaluate response, develop lessons learned, update response plan, prepare final report**
- **Report Contents (minimum)**
 - **Summary**
 - **Description of the emergency**
 - **Response to the emergency**
 - **Human Consequences**
 - **Environmental Consequences**
 - **Dose Assessment**
 - **Conclusions and Recommendations**



Summary

- This lecture provided
 - International requirements for establishing emergency management
 - Generic response organization
 - Initial response concepts
 - Emergency management functions
 - Responsibilities/tasks
- **Remember:** saving lives, treating injuries and fire fighting hazards are the priorities



Where to Get More Information

The role and tasks of the Emergency Manager
are described in more details in the

**INTERNATIONAL ATOMIC ENERGY
AGENCY**

**Generic Procedures for Assessment and
Response during a Radiological Emergency**

IAEA-TECDOC-1162, Vienna (2000)

