

Organization and structure of preparedness and response

A general introduction

International workshop on:

*Risk assessment of Industrial accidents and Enforcement
of Cross-border Obligations (RIECO)*

18 – 19 September 2013

Industrial accident

An “industrial accident” means an event resulting from an uncontrolled development in the course of any activity involving hazardous substances that can cause severe damage and harm as well (human health, environment, livelihoods and property).

They can be caused by chemical, mechanical, civil, electrical or other process failures due to an accident, negligence, incompetence or faulty decision making in an industrial plant. They also can be triggered by natural hazards.

Key features of an industrial accident

- Low probability
- Uncertain / ambiguous causes and effects
- High impact



Common features

- The element of surprise
- Short decision time
- Situation materializes unexpectedly
- Decisions are required urgently
- Time is short
- Specific threats are identified
- Urgent demands for information are received
- Sense of loss of control
- Pressures build over time
- Demands are made to identify someone to blame
- Outsiders take an unaccustomed interest
- A threat to the organization
- Reputation suffers
- Communications are increasingly difficult to manage

Effects and consequences

Risks:

- Severe direct and indirect effects on the (human) health, environment and property



Emergency (crisis) management

Emergency management is the process by which an organization deals with a major event that threatens to harm the organization, its stakeholders, or the general public.

It includes the development of plans to reduce the risk of an accident or crisis occurring and to deal with any crisis that do arise, and the implementation of these plans so as to minimize the impact of it and to assist the organization to recover from them.

Plans are needed

An emergency management plan generates order out of chaos. It needs strong leadership by well-trained and rehearsed individuals. Everyone within an organization should know what his or her role is in an emergency and should be prepared to deal with one.

Top 10 pitfalls (contingency) plans

1. No support from top management
2. Insufficient involvement of employees and stakeholders
3. No or bad planning
4. Insufficient training and exercise
5. No designated leader
6. Plan is not maintained and not 'up to date'
7. No method and system for alarming the employees
8. Legislation for health employees is not included in the plan
9. No procedures for stopping critical processes
10. Employees are not informed how to act in cases of emergencies

'Golden rules' public authorities

- Seek to develop, enforce and continuously improve policies, regulations and practices
- Provide leadership to motivate all stakeholders to fulfill their roles and responsibilities
- Monitor the industry to help ensure that risks are properly addressed
- Help ensure that there is effective communication and cooperation among stakeholders
- Promote inter-agency coordination
- Know the risks within your sphere of responsibility, and plan appropriate
- Mitigate the effects of accidents through appropriate response measures
- Establish appropriate and coherent land-use planning policies and arrangements

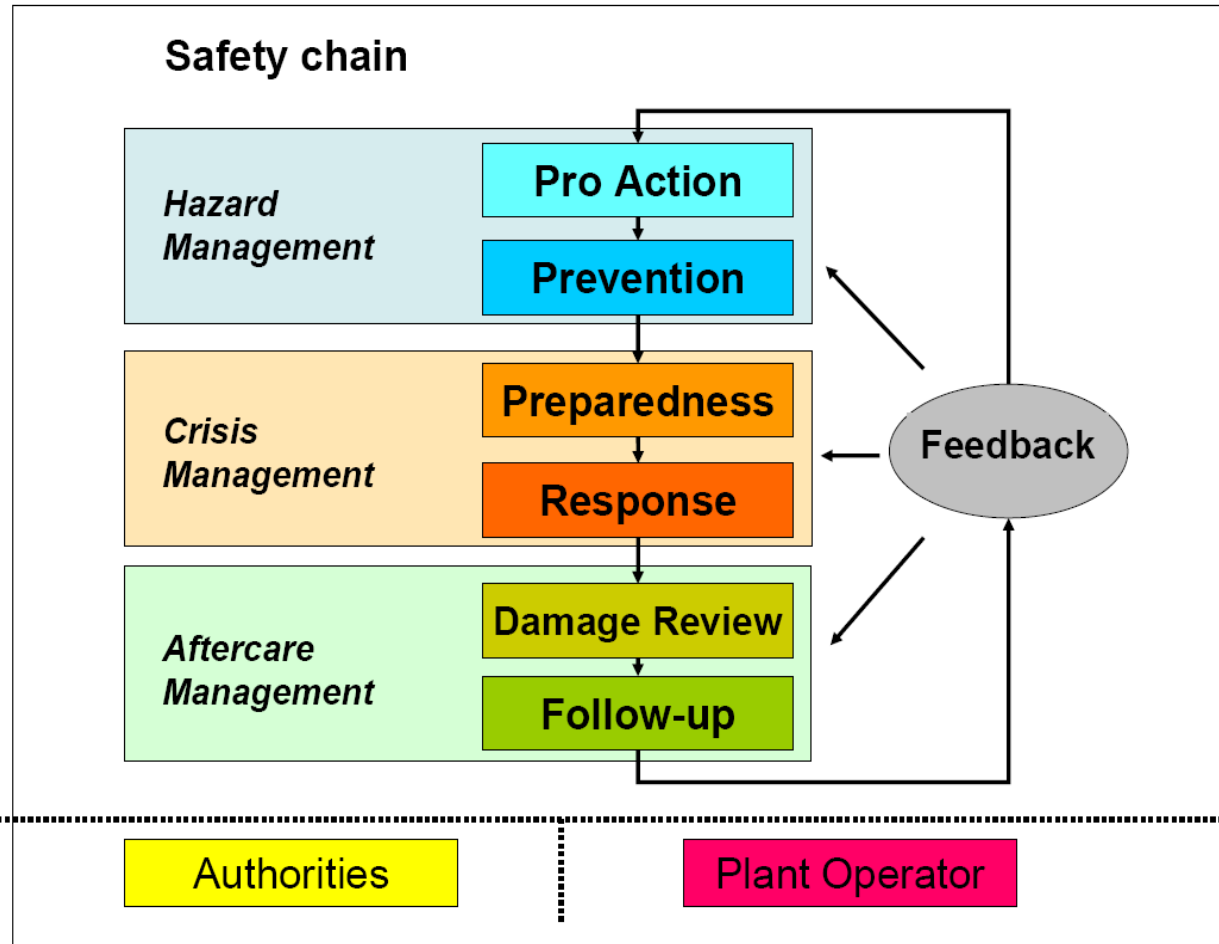
Safety chain

The 'safety chain' approach is a widely used model for policy making and evaluation in terms of risk management. Based on going through the links of the chain, plans can be developed.

Phases and interlinked elements of risk mitigation and crisis management:

- Proaction
- Prevention
- **Preparedness**
- **Response**
- Damage review
- Follow-up

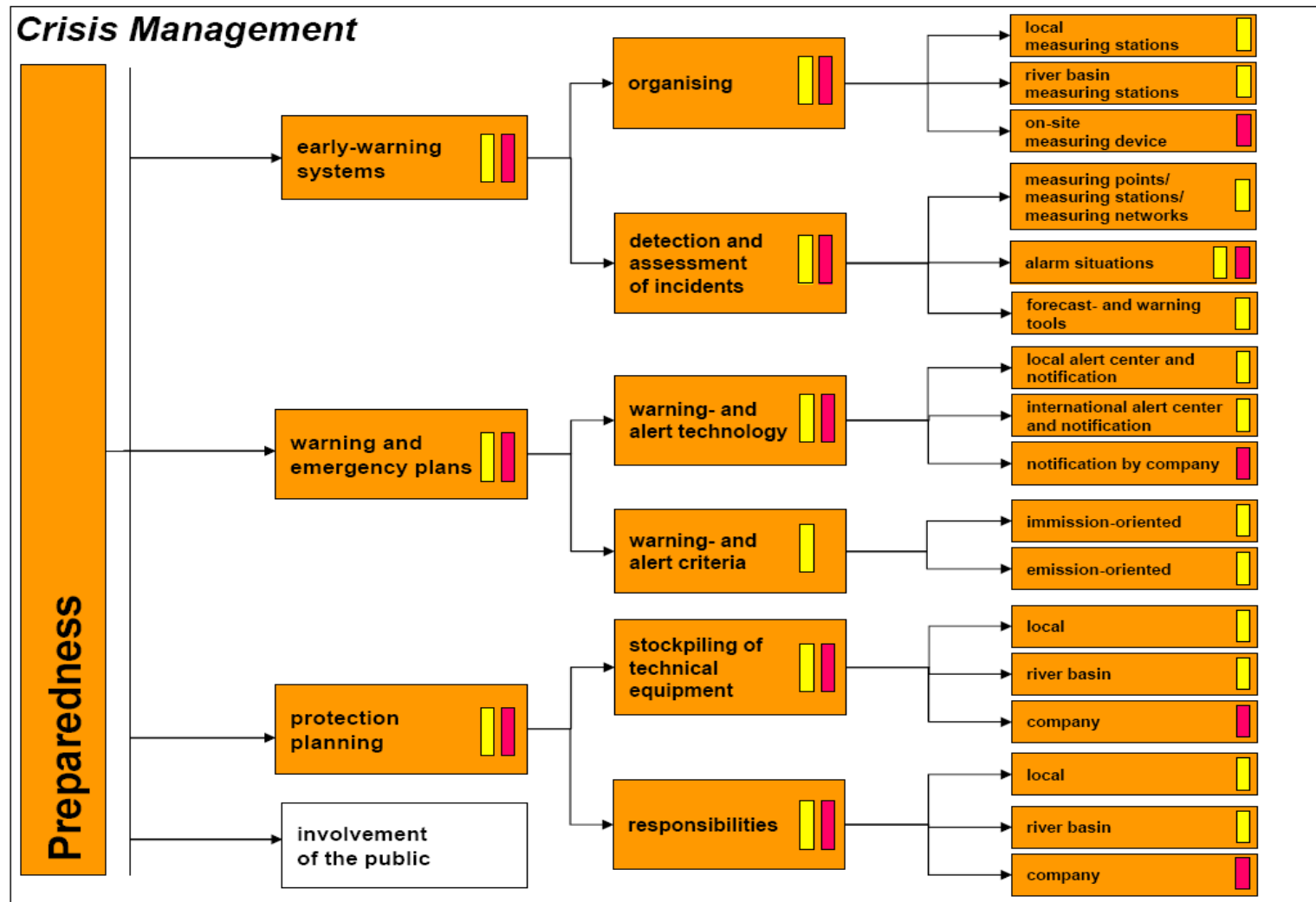
Safety chain



Safety chain

- Continued evaluation of the elements of the safety chain will lead to optimal risk and crisis management of accidents
- A close involvement of the industry and the authorities within the establishment of each link is highly important
- Obligations applicable under legislations and policy must be implemented
- Extra or specific measures must be taken to encourage and secure a safe environment
- Organizational measures must be included such as a safety management system
- Compliance monitoring by responsible authorities in each stage of the safety chain is a condition

Emergency preparedness



Emergency preparedness: general principles (1)

- Establishment of emergency planning activities and programs by public authorities and industry
- Elaboration of possible scenarios and an identification of the potential risks and the zones where effects are likely to occur
- Plans should include the assessment of potential consequences for health and the environment and the identification of appropriate measures
- Take complicating factors into account as well as factors that make response more difficult

Emergency preparedness: general principles (2)

- All parties who will be involved in an emergency response effort must be involved in the emergency planning process
- On- and off-site emergency plans should be consistent and integrated
- Good cooperation between industry and response services is essential
- Emergency plans (on- and off-site) need to identify the roles and responsibilities, the governance, the chain of command and the communication lines
- Emergency plans must be tested and reviewed regularly and: trained, trained and trained!!

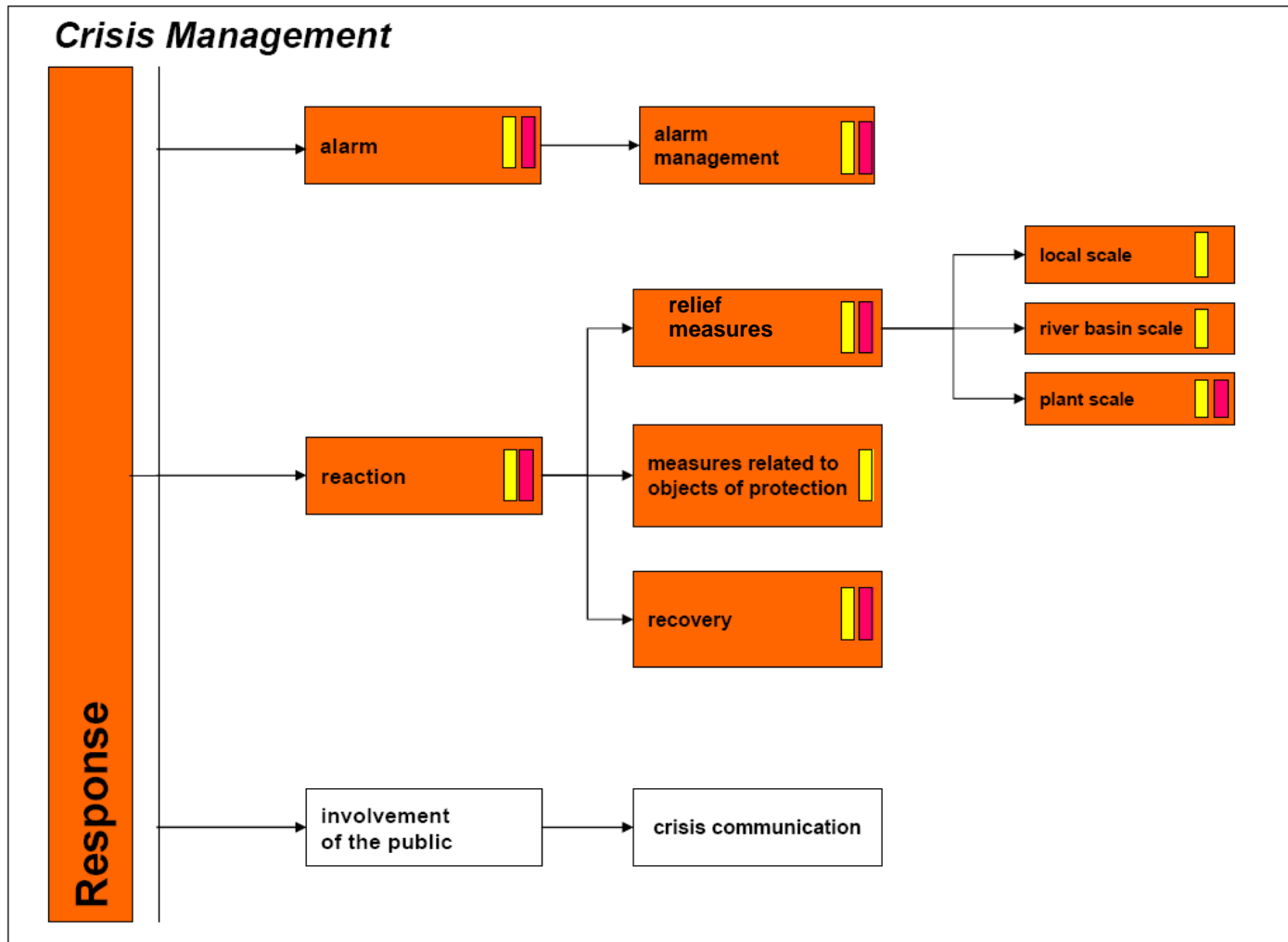
Emergency preparedness: general principles (3)

- A realistic assessment of the existing and needed skills, equipment and (technical) resources must be made
- All responsible parties must ensure the immediate availability of the needed resources and equipment
- Information, supplies and equipment needed to help the response staff to assess and decide on actions should be readily available (be keen on back-up systems)
- Systems and procedures must be in place for rapid detection and immediate notification
- Notification and information to the public
- Share experience and improve planning etc through activities for all stakeholders

Emergency preparedness: public authorities

- Establishment of guidelines and standards
- To ensure the development, implementation, testing and up-dating of on- and off-site emergency plans
- The identification and mapping of hazardous activities
- The integration of emergency plans for hazardous installations with the planning for natural disasters
- Identification and involvement of all relevant parties and institutionalizing of professional emergency agencies, networks and coordination centers
- Training and education of (first) responders
- Access to relevant information
- Health care policy and actions towards the response personnel, employees and the (neighboring) communities
- Hospitals and other facilities need to develop emergency plans
- Communication to the public

Emergency response



Emergency response: general principles

- Systems in place to immediately alert response personnel in the event of an accident or an imminent threat of an accident
- Parties responsible for emergency response should be involved in the planning process and the review of plans
- In the event of an accident, stakeholders should take all reasonable measures to minimize exposure and to limit adverse effects to health, the environment and property
- Spokespeople to provide information to the public in all phases of an accident should have the necessary skills, authority and credibility for effective communication

Emergency response: public authorities (1)

- Alerted to an accident, response authorities should activate their emergency plans
- Immediate actions must be taken by the on-scene coordinator to avoid or to limit exposure of humans
- Decisions must be taken to protect potentially affected public. Shelter and evacuation plans are active
- Exposure assessments must be executed and decisions taken, to protect the health and the environment, also taking into account short, mid and long-term effects
- Arrangements should be made for the provision of first aid and other medical treatment

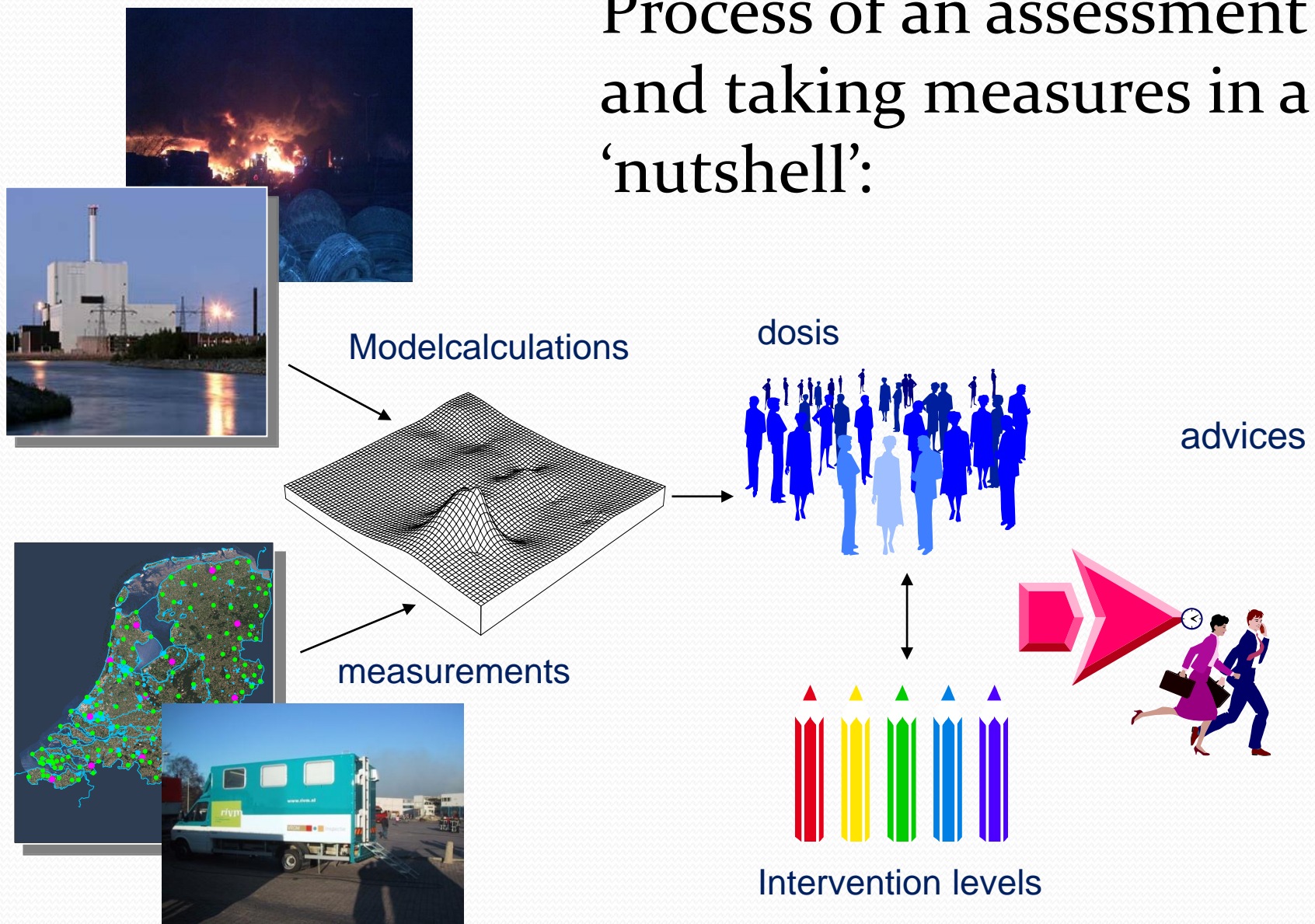
Emergency response: public authorities (2)

- Command and control system must be crystal clear to all
- Systems should be in place to obtain the equipment, specialists and other resources needed for the response
- First responders should have sufficient information, education, training and experience to be able to assess the situation and the follow-up
- Hospitals and other facilities should activate their plans
- Public authorities must provide support local response organizations to help to protect the health and the environment (technical support, scientific, equipment)
- Decisions taken in all phases of the emergency must be documented (review of effectiveness and evaluation)
- A sound communication to the public must be conducted

Emergency response: public authorities (3)

- Responsibilities on local, regional and national levels
- Organize the cooperation on all levels
- Include all response capabilities in response plans
- Train the variety of scenario's
- Create where possible (in)formal networks for specific assessments (health, environment)
- Make use of existing capacities and capabilities and organize a smart and efficient 24/7 availability
- Crisis management = network management
- Evaluate all incidents, identify lessons and learn from them

Process of an assessment and taking measures in a 'nutshell':



Network organizations Netherlands

- Emergency Planning and Advisory Units (EPA's) for:
 - environmental emergencies
 - nuclear and radiological emergencies
 - drinking water emergencies
 - terroristic threats and attacks (= National Laboratory Network)
- The network organizations:
 - are 'virtual' and to be activated during an emergency
 - are staffed by experts of 16 scientific institutes (> 100 members)
 - have a flexible structure
 - perform integrated advices

Available expertise

- Measure and sampling strategies
- Chemical analysis
- Risk and plume calculations
- Modelling (exposure) and future scenario (e.g. dispersion in air and water)
- External safety risks
- Risk analysis health impact
- Toxicological information
- Meteorological information
- Risk assessment aquatic environment
- Assessment food safety
- Assessment CBRN exposures
- Managing emergency response measures
- Crisis management experience

Sampling



Mobile laboratory facilities



GCMS: identification and semi-quantitative determination of organic compounds in air, water and soil samples



XRF: semi-quantitative determination of elements in air particles, water, soil and other solid samples

Back Office support in the Netherlands

- Network of >10 scientific institutes (100 – 120 experts)
- Model calculations (e.g. dispersion in air, dispersion in water, exposure modelling) and future scenario's
- Physical-chemical properties of substances
- Toxicological information
- Health risk assessment
- Specific expertise about air, water, soil or food contamination
- External safety risks
- Laboratory analyses (if not possible on site)
- Assessment reports regarding the expected situation
- Shared information and advices real time
- Real time assistance of various experts

Example: risk and plume calculation



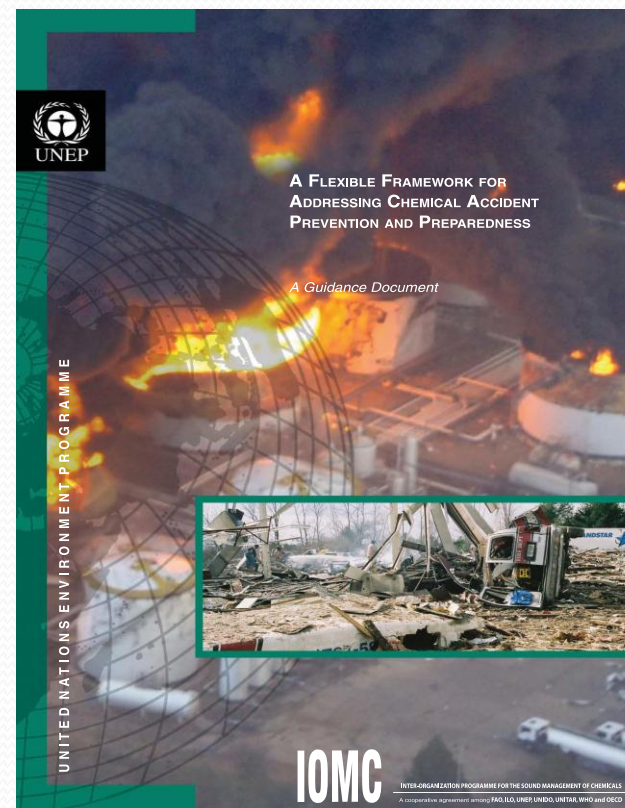
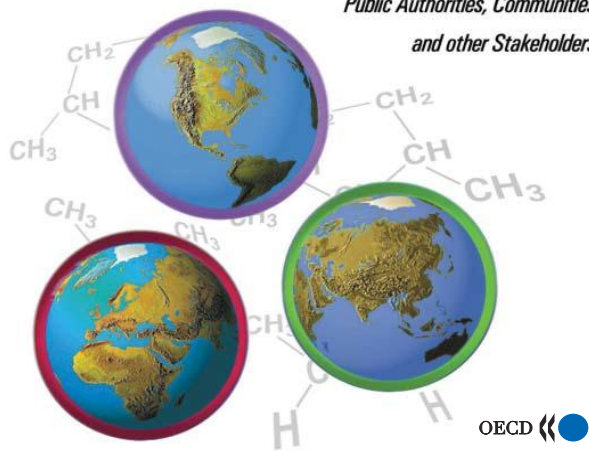
Important literature (1):

<http://www.oecd.org/chemicalsafety/risk-management/2789820.pdf>

[http://www.eecentre.org/Modules/EECResources/UploadFile/Attachment/Flexible Framework for Addressing Chemical Accident Prevention and Preparedness.pdf](http://www.eecentre.org/Modules/EECResources/UploadFile/Attachment/Flexible%20Framework%20for%20Addressing%20Chemical%20Accident%20Prevention%20and%20Preparedness.pdf)

OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response

*Guidance for
Industry (including Management and Labour),
Public Authorities, Communities
and other Stakeholders*



Important literature (2)

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE
COMMISSION ÉCONOMIQUE DES NATIONS UNIES POUR L'EUROPE
ЕВРОПЕЙСКАЯ ЭКОНОМИЧЕСКАЯ КОМИССИЯ
ОРГАНИЗАЦИЯ ОБЪЕДИНЕННЫХ НАЦИЙ

**Convention
on the Transboundary Effects
of Industrial Accidents**

as amended on 19 March 2008

**Convention
sur les effets transfrontières
des accidents industriels**

telle que modifiée le 19 mars 2008

**Конвенция
о трансграничном воздействии
промышленных аварий**

с поправками от 19 марта 2008 года



UNITED NATIONS
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<http://www.unece.org/index.php?id=32831>

Conclusion

- The prime responsibility for safety lies within the industry
- Solid prevention and safety programs must be in place and up-to-date, maintained and trained
- Public authorities share in the responsibility to prevent accidents (legislation and compliance monitoring)
- By systematically going through all aspects of the safety chain and an adequate follow-up on the findings the chances and effects of severe accidents will be minimal
- Public authorities on local, regional and national level play a key role in the preparedness and response in the event of an industrial accident



Thank you for your attention !