

IFA Technical Committee Meeting

**Thessaloniki, Greece
10-12 October 2001**



APELL

Awareness and Preparedness
for Emergencies at Local Level

IFA Technical Committee Meeting
Thessaloniki/ Greece
10 to 12 October 2001

UNEP

Dr. Ernst Goldschmitt, UNEP DTIE, APELL Programme



Enschede, 13 May 2000

STATISTICS

● 22 people killed

● 947 injured

Destruction:

- Entire factory
- 400 houses
- More than 1000 houses damaged

Toulouse, 21 September 2001

STATISTICS

● 29 people killed

● 700 injured

Destruction:

- Entire factory
- Ten thousands of windows
- Houses etc.



Common observations for the vast majority of such disasters:

- The negative impact is unacceptably high and could have been limited, if...
- Hardly anybody had ever expected, that such an incident could occur at all
- Accidents and disasters could have been prevented
- **Citizens get injured and killed, environment damaged, property destroyed**



United Nations Environment Programme

Developed a strategy for:

- **Preparedness**
- **Efficient emergency response planning**
- **Risk reduction**
- **Mitigation**
- **Disaster prevention**



The APELL Programme

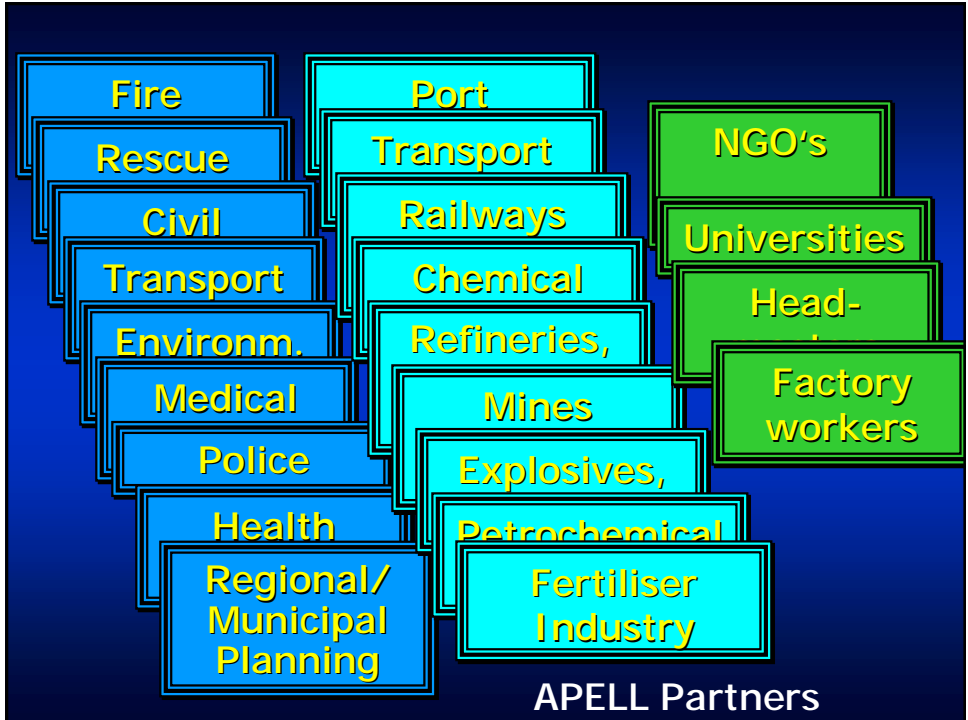
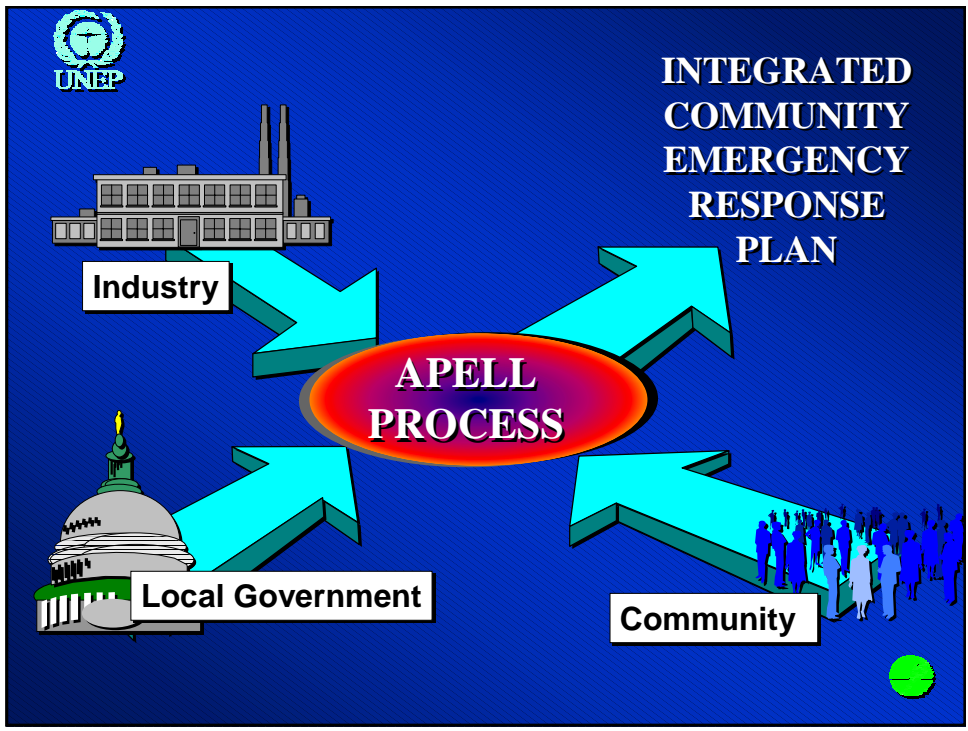
- ❖ Is the result and the consequence of an analysis of major disasters in the past
- ❖ Designed to minimise the negative impact of accidents
- ❖ An easy to be followed guide for emergency response planning
- ❖ Encourages an intensive dialogue
- ❖ Promotes a detailed hazard evaluation and risk reduction strategy

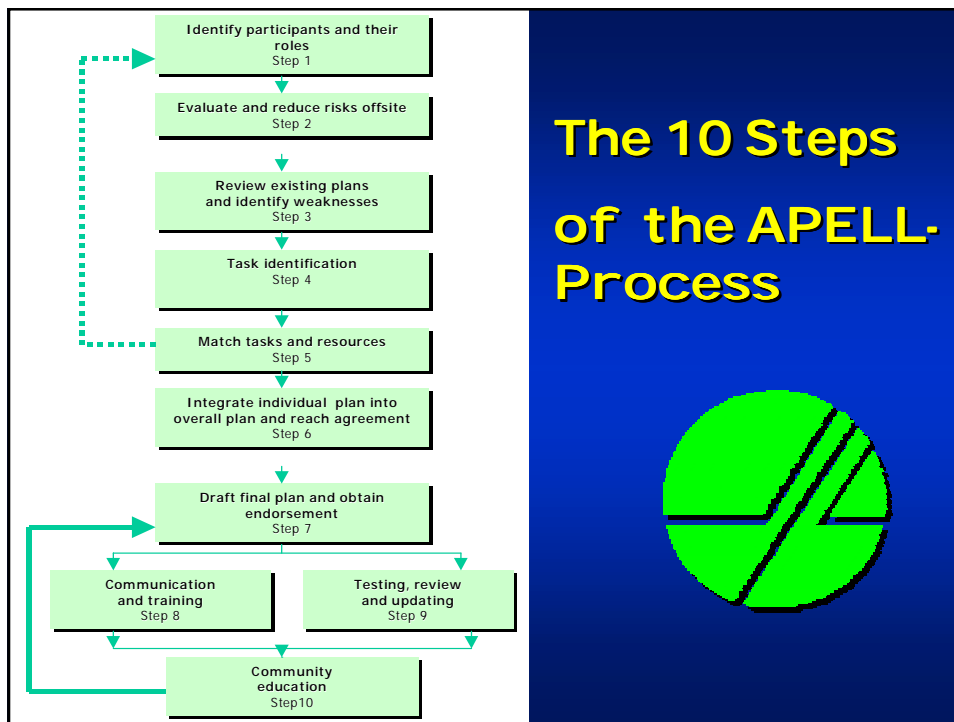


APELL



- ☑ Integration of emergency response capabilities (industry, fire brigade, civil defence)
- ☑ Preparedness of all involved agencies (health services, rescue services, fire brigade, police, communication, volunteers, media,
- ☑ Preparedness covering all risk types
- ☑ Clear definition of command lines
- ☑ Regular update of the plan,
- ☑ Exercises involving stakeholders







Communication is the key to efficient disaster management

Raising awareness

Getting prepared

When responding

Local Government

Fire brigade, health services, police, rescue services,

Community

Neighbours, schools, NGO's, institutions, associations,

Industries

Media



The key step in the APELL Process

Step 2

Evaluate the hazards and risks that may result in emergency situations in the community

- Identify and evaluate **all** risks that may affect the community





The key step in the APELL Process

Step 2

Evaluate the hazards and risks that may result in emergency situations in the community

- Identify and evaluate **all** risks that may affect the community
- Agree upon and introduce measures for risk reduction



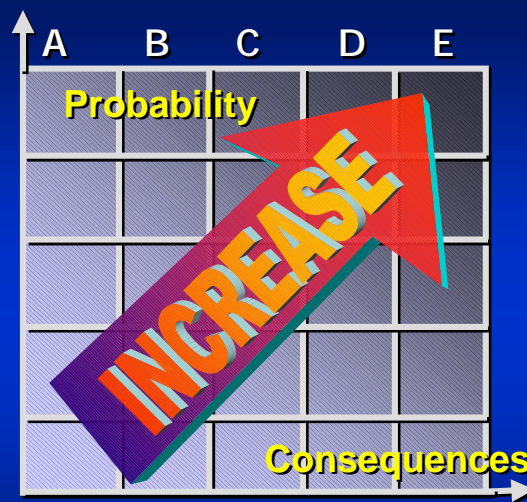
Very probable 5
More than once a year

Once in 1 - 10 years 4

Quite probable 3
Once per 10 to 100 years

Once per 100 to 1000 years 2

Improbable 1
Less than once per 1000 years



Unimportant Limited Serious Very serious Catastrophic

RISK ASSESSMENT





Risk Assessment:

ENSCHEDE Fire Works factory 2000



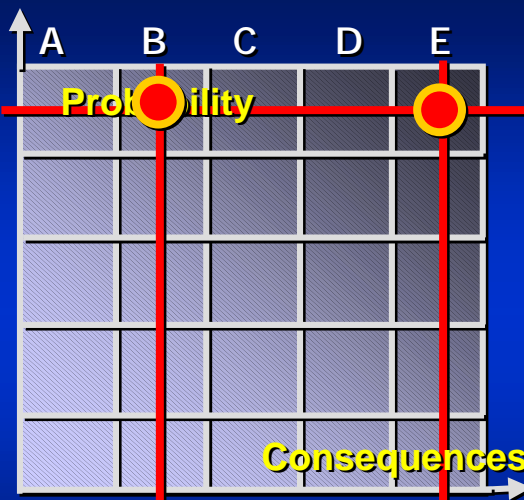
Very probable 5
More than once a year

Once in 1 - 10 years 4

Quite probable 3
Once per 10 to 100 years

Once per 100 to 1000 years 2

Improbable 1
Less than once per 1000 years



Unimportant Limited Serious Very serious Catastrophic

RISK ASSESSMENT





Risk Assessment: Toulouse 2001



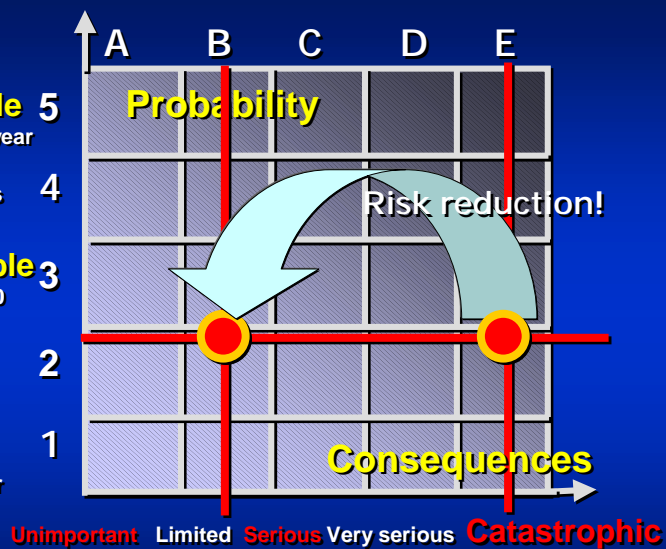
Very probable 5
More than once a year

Once in 1 - 10 years 4

Quite probable 3
Once per 10 to 100 years

Once per 100 to 1000 years 2

Improbable 1
Less than once per 1000 years



RISK ASSESSMENT



Emergency Prevention, Response Planning and Preparedness in Fertiliser Industry:

1

Major Hazards:

Ammonia

Fire and explosion hazard due to:

- Leaks from the hydrocarbon feed system
- Leaks of synthesis gas in the CO/removal/synthesis gas compression areas



Emergency Prevention, Response Planning and Preparedness in Fertiliser Industry:

2

Major Hazards:

Ammonia

Toxic hazards:

- Release of liquid ammonia from the synthesis loop
- Accidental release during storage and handling



Emergency Prevention, Response Planning and Preparedness in Fertiliser Industry:

3

Major Hazards:

UREA

- Equipment failure due to corrosion
- Explosion hazard (formation of an explosive gas mixture)
- Toxic hazard resulting from NH_3 release



Emergency Prevention, Response Planning and Preparedness in Fertiliser Industry:

4

Major Hazards:

NITRIC ACID

- Equipment or piping failure due to corrosion
- Explosion hazard (formation of an explosive gas mixture)
- Explosion of nitrite or nitrate salts



Emergency Prevention, Response Planning and Preparedness in Fertiliser Industry:

5

Major Hazards:

AMMONIUM NITRATE /
CALCIUM AMMONIUM
NITRATE

- NH_4NO_3 is an oxidising agent
- Explosions can occur in pumps, during storage, etc.
- Inorganic and organic contaminants, pH, temperature, density, concentration strongly influence the detonability of NH_4NO_3



Emergency Prevention, Response Planning and Preparedness in Fertiliser Industry:

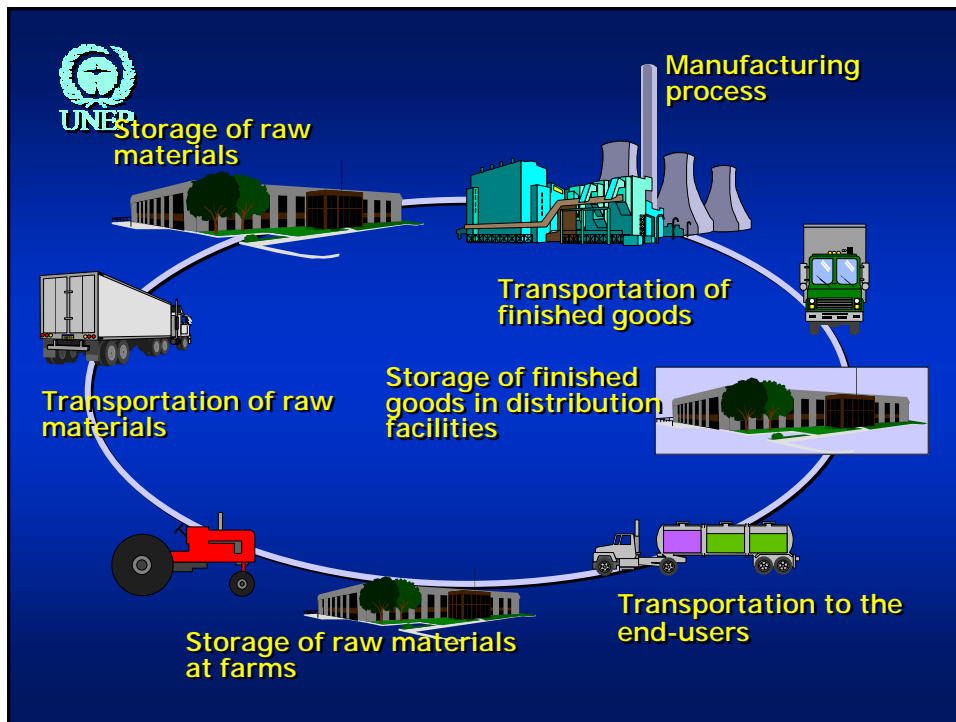
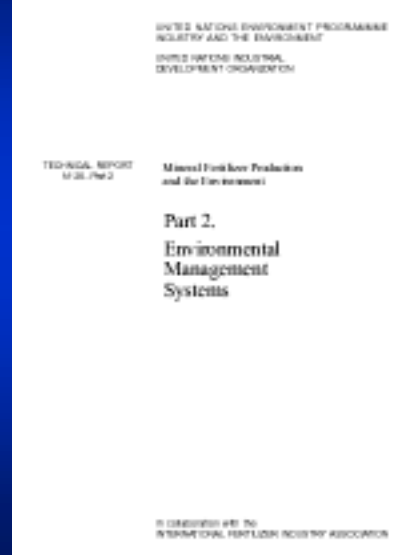
6

Major Hazards:


Compound fertilisers (mixed and acid based)

- Slurry pump explosion
- Slurry decomposition
- Product decomposition (cigar combustion)





Date	Place/Country	Cause	No. Victims/ damage
26.07.93	Richmond / USA	Sulfuric acid cloud	3000 injured
08.08.93	Shenzen / China	Acid tank explosion, fire	84 dead, 540 injured 3 Mio HK \$
24.07.94	Milford Haven / UK	Fire in oil refinery, steam cloud explosion (after storms with lightening)	106 Mio US \$
14.01.88	Vitry sue Seine / France	Explosion in a fertiliser factory	55 Mio FFr
10.09.97	Columbus/USA	Explosion causes collapse of buildings (chemical factory)	> 25 dead 8 injured
18.04.88	Marsa el Brega / Lybia	Explosion of a Ammonia plant	11.5 Mio LD
08.03.92	Erivan /Armenia	Explosion of a Ammonia plant	21 dead



APELL Handbook


APELL for Port Areas

TransAPELL

APELL for Mining

In Preparation:

APELL for Natural Disasters





APELL
for 
Mining



UNITED NATIONS ENVIRONMENT PROGRAMME
Division of Technology, Industry and Innovation

TECHNICAL REPORT N°41

APELL for Mining

Guidance for the Mining Industry to Enhance Awareness and Preparedness for Emergencies at Local Level



UNEP – International Programme on the Impact of Local Level



Proposal :

APELL
for 
Fertiliser Industry



UNITED NATIONS ENVIRONMENT PROGRAMME
Division of Technology, Industry and Innovation

TECHNICAL REPORT N°41

APELL for

Guidance for the Mining Industry to Enhance Awareness and Preparedness for Emergencies at Local Level



UNEP – International Programme on the Impact of Local Level

APELL contacts:

<http://www.uneptie.org/pc/apell/>

E-mail: Ernst.Goldschmitt@unep.fr

Fax: +33- (0)1 44 37 14 74

Tel.: +33- (0)1 44 37 30 07

