Public-private Partnership – Key for Bussiness Continuity by Integral Risk Management

At IDRC Davos on 27th August 2008

Dr Rakesh Dubey

Director

Disaster Management Institute

Bhopal

rakeshddubey@hotmail.com

Objective of the presentation

1. Understanding the PPP concept
2. Risk assessment and management
3. Appplication and integration of 1 & 2 in Bussiness continuity

Is the slide represent an Industry ?

Is this slide also represent an Industry ?

Is it an Industry ? Its Bhopal

Is it Disaster ? Loss of property, lives, environment, disruption of bussiness

Business Continuity Plan

- The ability of an organization to ensure continuity of service and support for its customers and community, etc. and to maintain its viability before, after, and during an event by taking confidence of Local, regional and national governments.

- **Simply :**

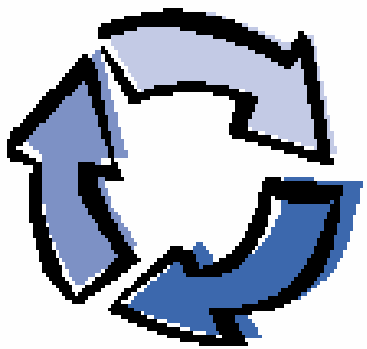
  The ability to stay in business after a disaster strikes!

BENEFITS OF A CONTINUITY OF OPERATIONS PLANNING PROGRAM

Reduce Disaster *Impact* on the company.

- **Plan *Timely* response to loss of business and computing resources.**
- **Provide a *Reliable* Source of Information to be used at time of Disaster.**
- **Provide *Clear* understanding of Roles and Responsibilities**
- **Provide *Ongoing Testing* of all Plans**
- **Provide *Ongoing Maintenance* of all Plans**

Industrial Disaster Management Cycle



Results of hazard/risk analysis
Legal & other requirements
Accident/injury history
Results from previous investigations
Planning
Previous audit results
Internal organizational requirements
Measurable objectives (with indicators)
Management programs

- Disaster Management Planning both on-site and off-site with following components:
  - A. Risk Assessment & Management
  - B. Emergency Preparedness
  - C. Community Dialogue

- Disaster Impact Assessment
  - Toxic release, heat fluxes, pressure waves

Risk Assessment & Management

1. evaluate range of potential incidents (without considering possible causes)
2. put mitigation in place for foreseeable ones
3. evaluate community consequences for range of incidents,

a) credible worst case

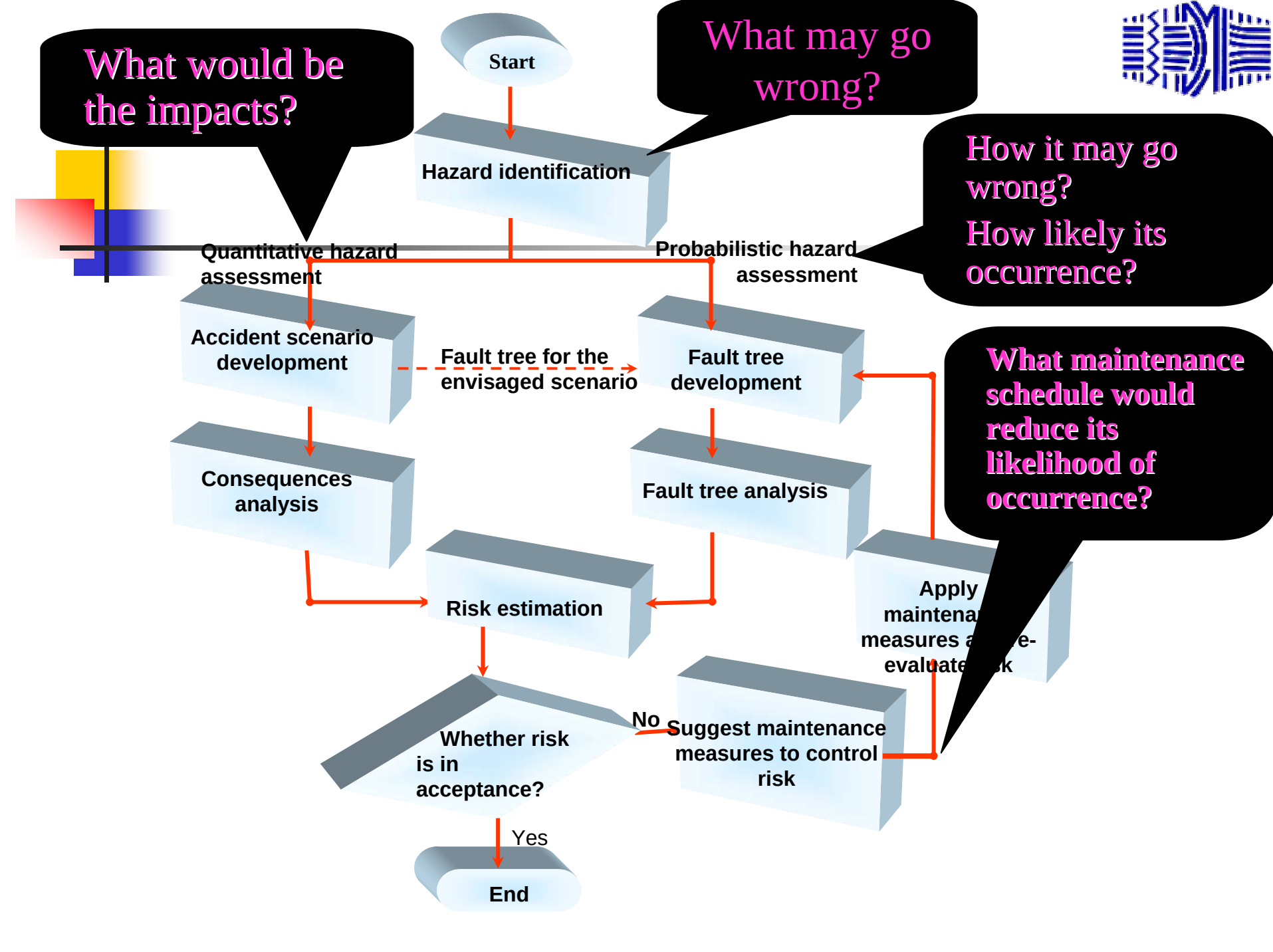
- largest tank or worst failure consequence
- reasonable duration of release
- passive mitigation in effect
- credible worst weather

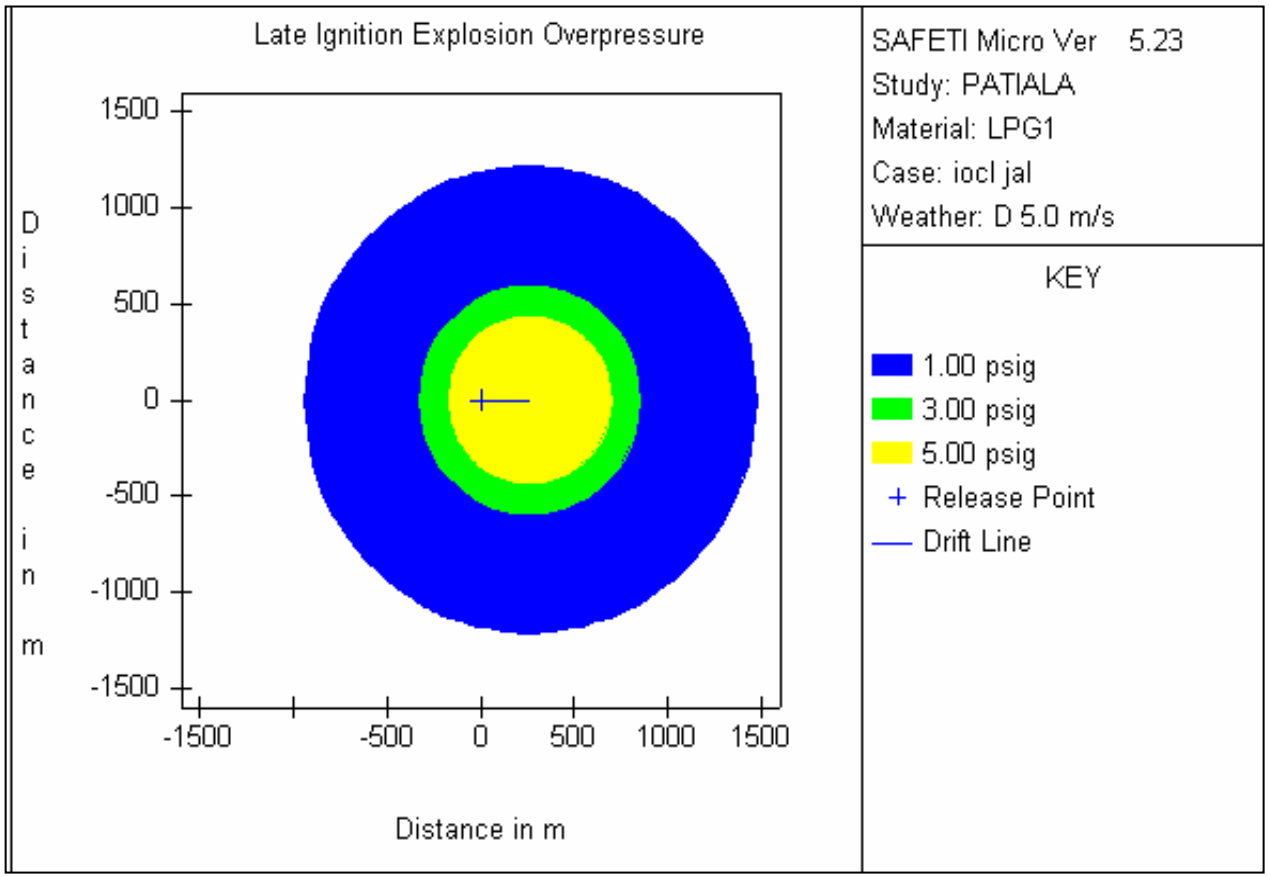
b) worst imaginable case

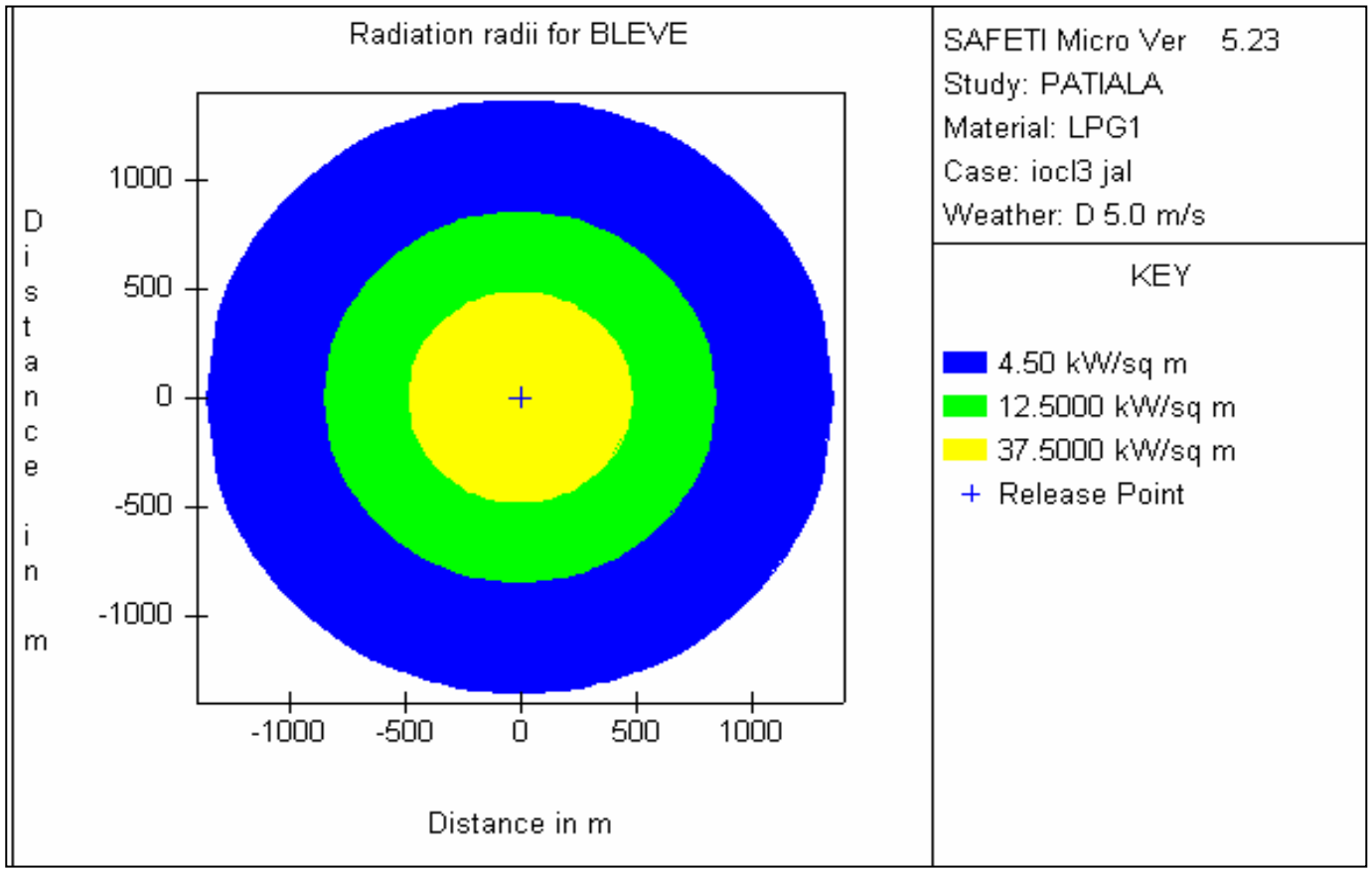
- largest tank or worst failure consequence
- worst possible duration or release
- no mitigation
- worst possible weather

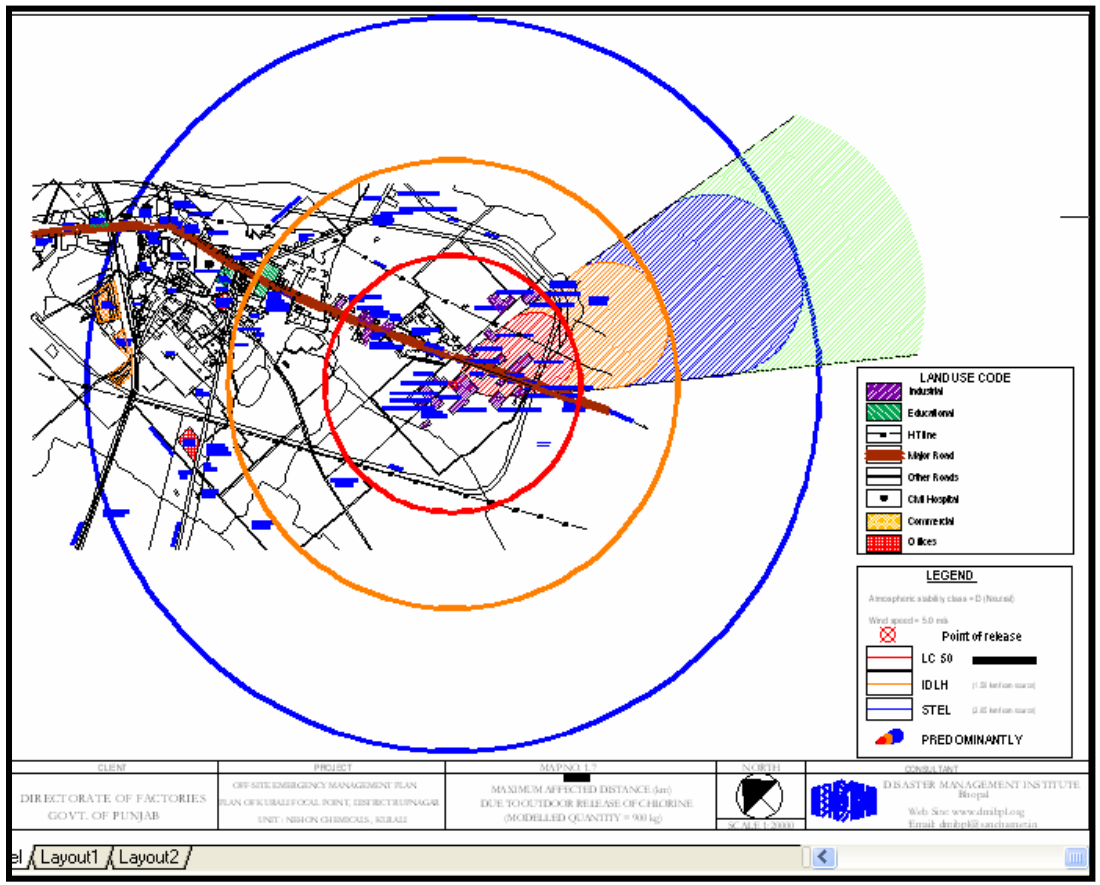
Reliability Risk Assessment

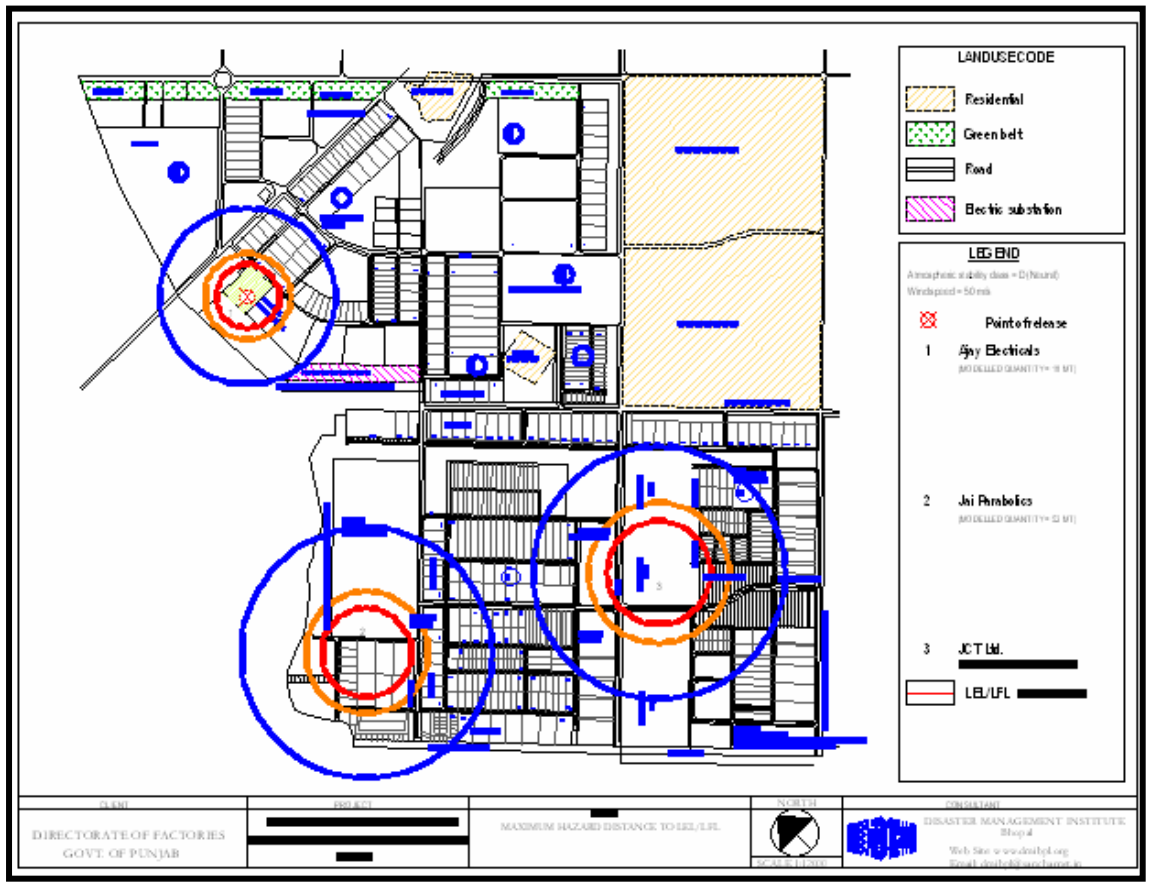
- Risk Based Maintenance Planning
  - Risk estimation
    - Hazard identification
    - Quantitative Hazard Assessment
    - Probabilistic Hazard Assessment
    - Risk Quantification
  - Risk evaluation
    - Setting up risk acceptance criteria
    - Risk comparison
  - Maintenance planning to run the plant safely
  - Risk treatment: Termination or transfer or acceptance

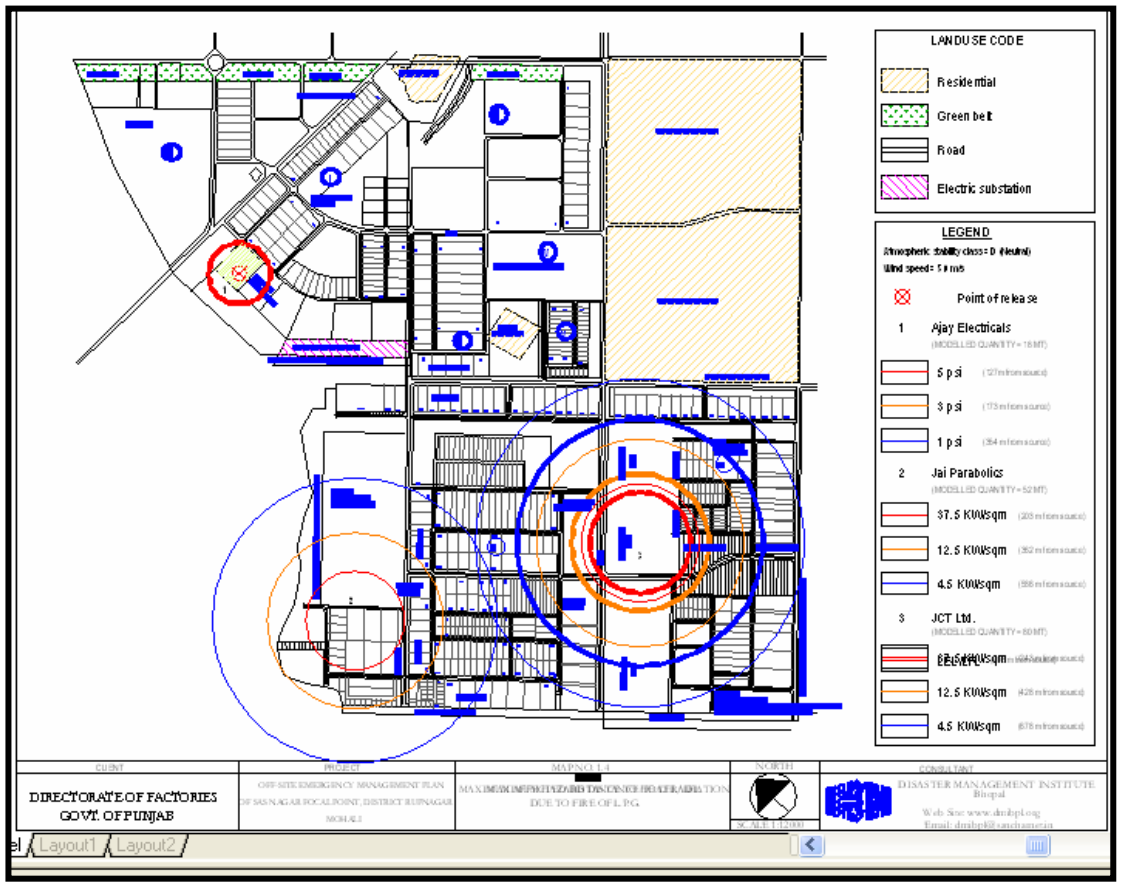

What would be the impacts?
Start
What may go wrong?
Hazard identification
How it may go wrong?
How likely its occurrence?
Quantitative hazard assessment
Probabilistic hazard assessment
Accident scenario development
Fault tree for the envisaged scenario
Fault tree development
What maintenance schedule would reduce its likelihood of occurrence?
Consequences analysis
Fault tree analysis
Risk estimation
Apply maintena measures a e-evaluate k
Whether risk is in acceptance?
No
Suggest maintenance measures to control risk
Yes
End

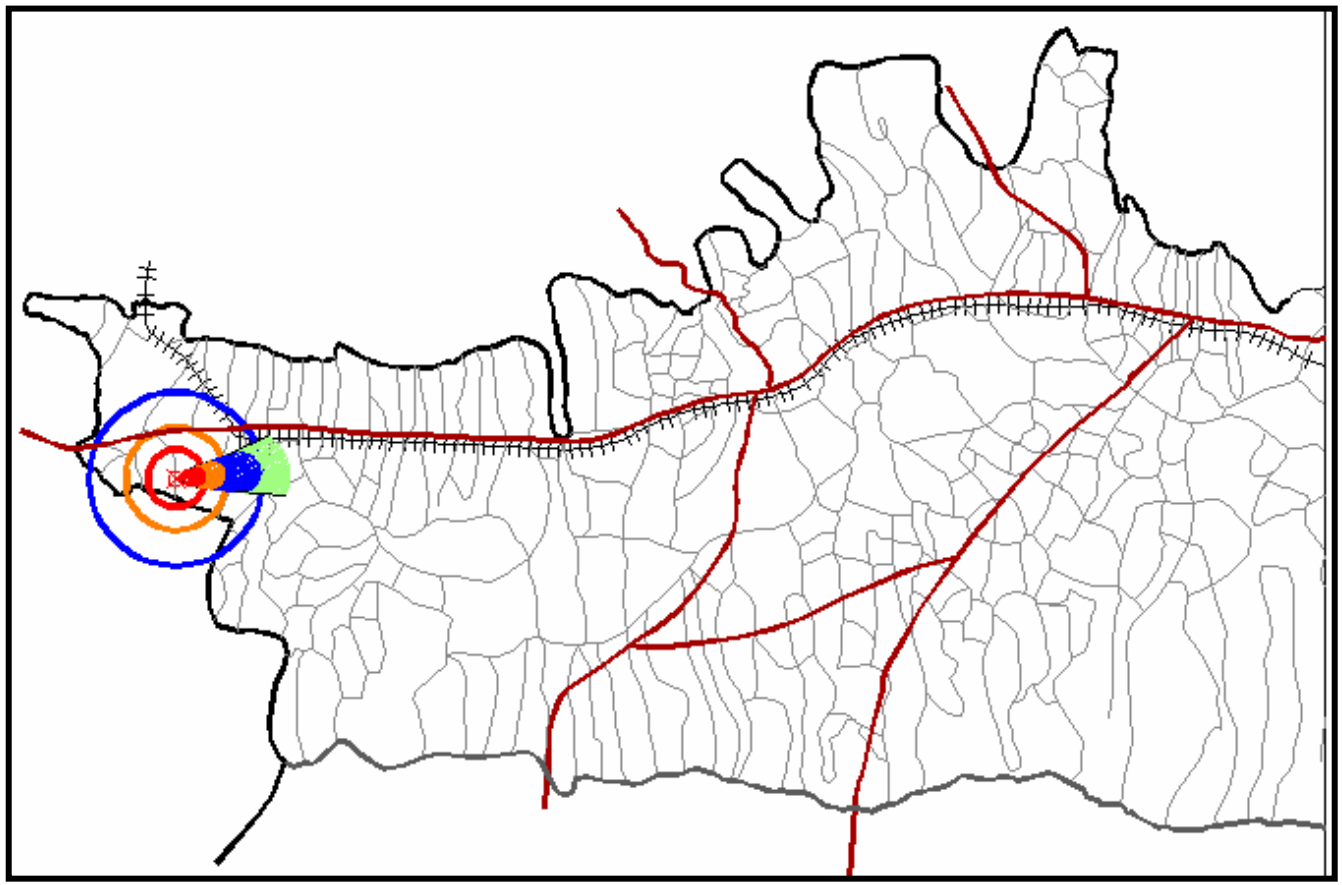

Late Ignition Explosion Overpressure
1500
1000
500
0
-500
-1000
-1500
Distance in m
-1500
-500
0
500
1000
1500
Distance in m
SAFETI Micro Ver 5.23
Study: PATIALA
Material: LPG1
Case: iocl jal
Weather: D 5.0 m/s
KEY
1.00 psig
3.00 psig
5.00 psig
Release Point
Drift Line

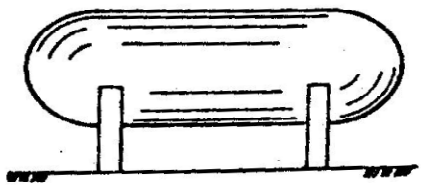

Radiation radii for BLEVE
Distance in m
1000
500
0
-500
-1000
-1000
-500
0
500
1000
Distance in m
SAFETI Micro Ver 5.23
Study: PATIALA
Material: LPG1
Case: iocl3 jal
Weather: D 5.0 m/s
KEY
4.50 kW/sq m
12.5000 kW/sq m
37.5000 kW/sq m
Release Point


LAND USE CODE
Industrial
Educational
HT line
Major Road
Other Roads
Civil Hospital
Commercial
Offices
LEGEND
Point of release
LC 50
IDLH
STEL
PREDOMINANTLY
CLIENT
DIRECTORATE OF FACTORIES
GOVT. OF PUNJAB
PROJECT
OFF-SITE EMERGENCY MANAGEMENT PLAN
MAP NO. 1.7
MAXIMUM AFFECTED DISTANCE (km)
DUE TO OUTDOOR RELEASE OF CHLORINE
(MODELLED QUANTITY = 900 kg)
NORTH
CONSULTANT
DISASTER MANAGEMENT INSTITUTE
Bhopal
Layout1
Layout2

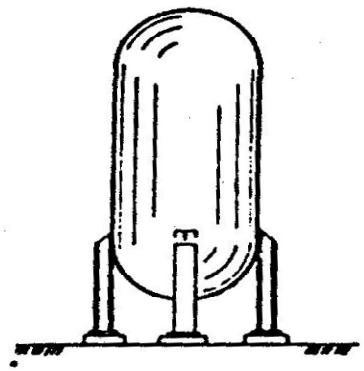

LANDUSECODE
Residential
Green belt
Road
Electric substation
LEGEND
Point of release
1 Ajay Electricals
2 Jai Parabolics
3 JCT Ltd.
LEL/UFL
DIRECTORATE OF FACTORIES
GOVT. OF PUNJAB
MAXIMUM HAZARD DISTANCE TO LEL/UFL
NORTH
DISASTER MANAGEMENT INSTITUTE
Bhopal


LAND USE CODE
Residential
Green belt
Road
Electric substation
LEGEND
Point of release
1 Ajay Electricals
5 psi
3 psi
1 psi
2 Jai Parabolics
37.5 KW/sqm
12.5 KW/sqm
4.5 KW/sqm
3 JCT Ltd.
12.5 KW/sqm
4.5 KW/sqm
CLIENT
DIRECTORATE OF FACTORIES
GOVT. OF PUNJAB
PROJECT
OFF SITE EMERGENCY MANAGEMENT PLAN
MAP NO. 1.1
DUE TO FIRE OF L.P.G.
NORTH
CONSULTANT
DISASTER MANAGEMENT INSTITUTE
Bhopal
Layout1
Layout2

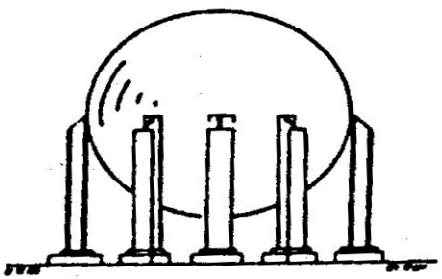




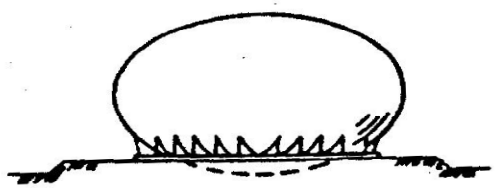
HORIZONTAL CYLINDRICAL TANK



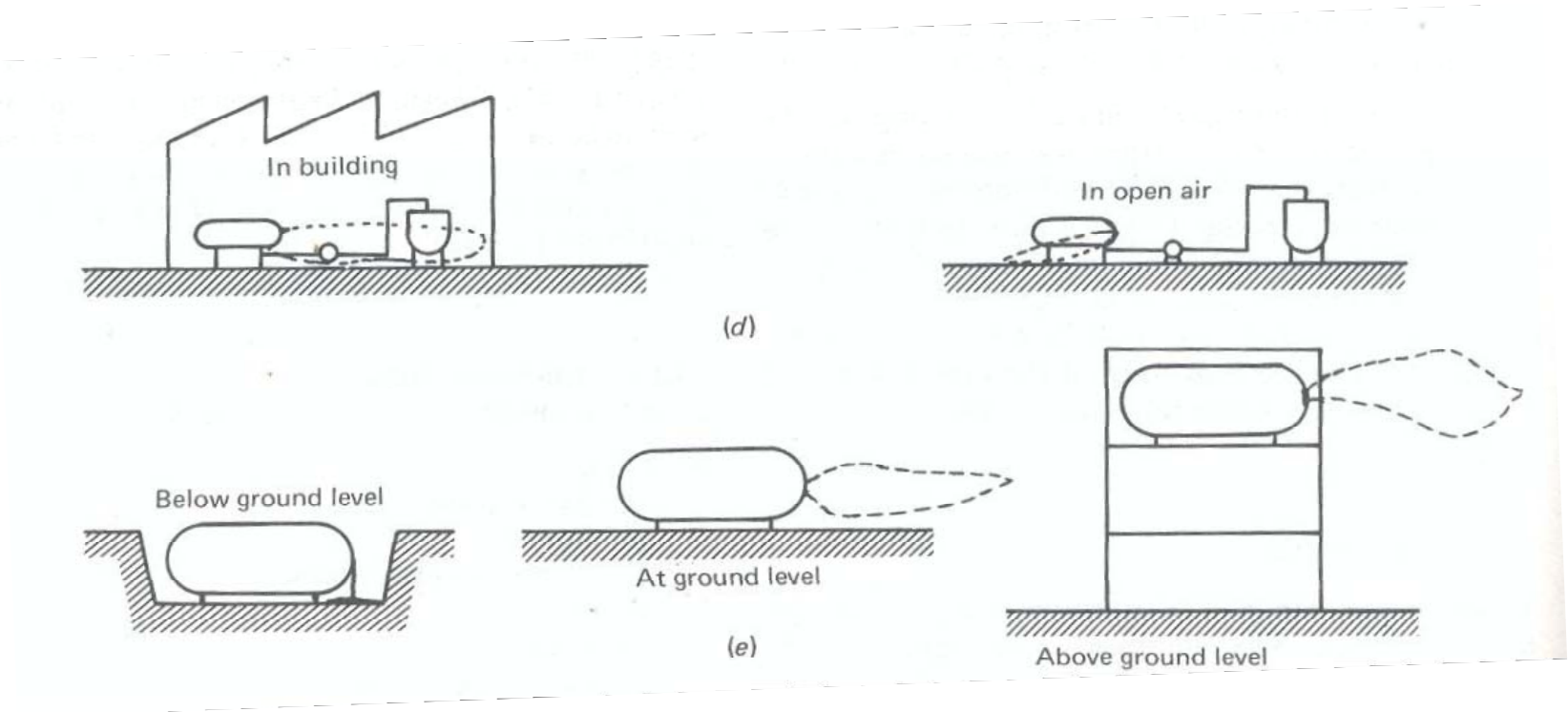
VERTICAL CYLINDRICAL TANK

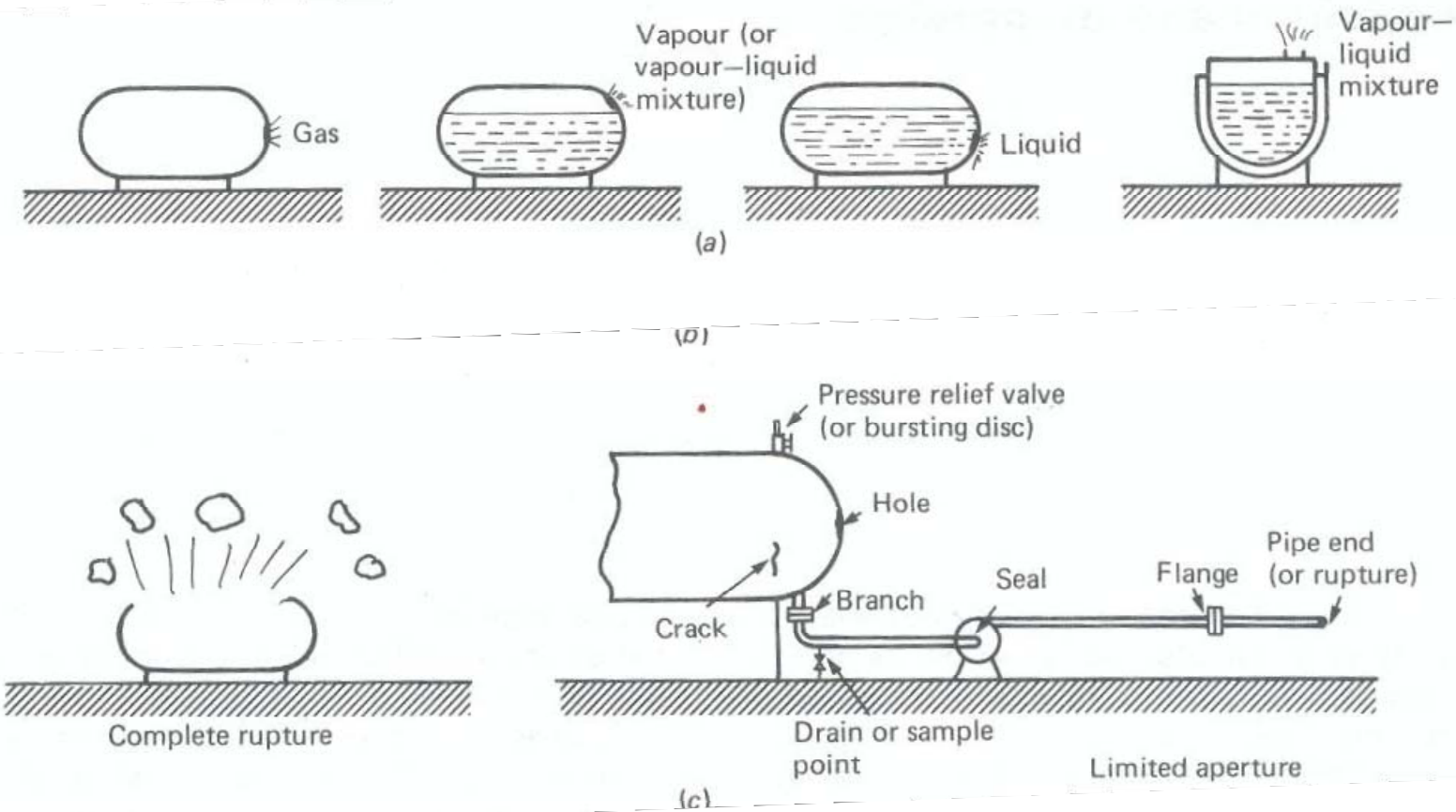


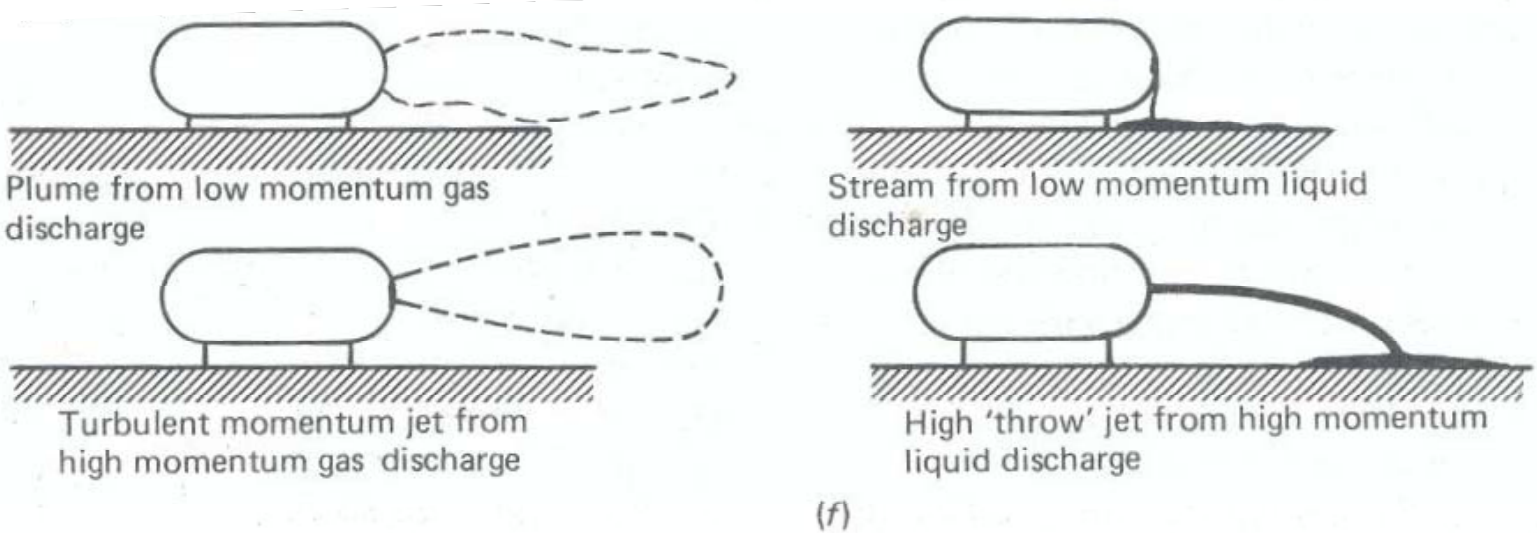
SPHERE



SPHEROID

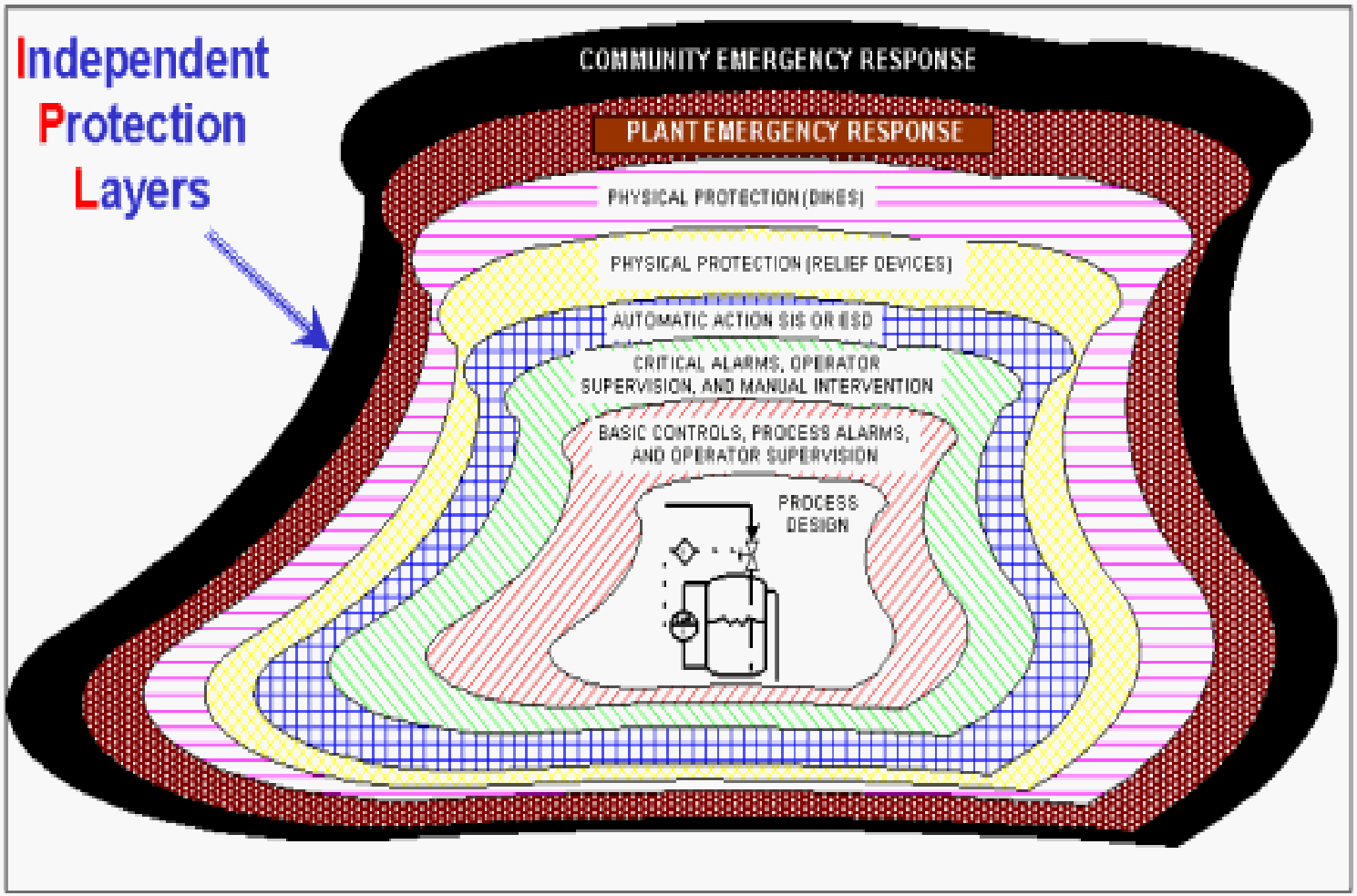

In building
In open air
(d)
Below ground level
At ground level
Above ground level
(e)


Gas
Vapour (or vapour–liquid mixture)
Liquid
Vapour–liquid mixture
(a)
(b)
Pressure relief valve (or bursting disc)
Hole
Crack
Branch
Seal
Flange
Pipe end (or rupture)
Complete rupture
Drain or sample point
Limited aperture
(c)


Plume from low momentum gas discharge
Turbulent momentum jet from high momentum gas discharge
Stream from low momentum liquid discharge
High 'throw' jet from high momentum liquid discharge
(f)

- **Preparedness, Planning, Response**

Layer of Protection Analysis



ALARP

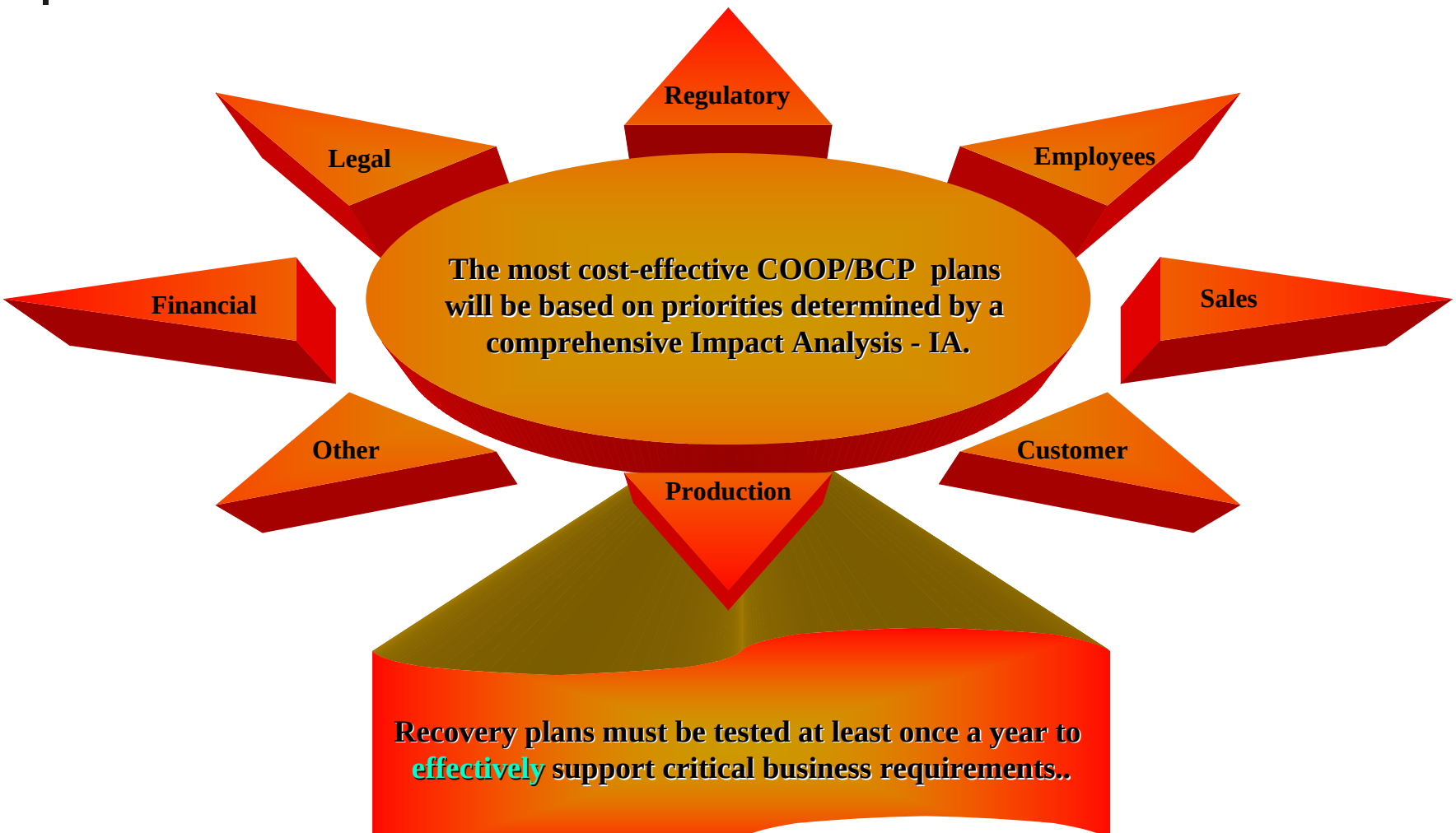
ALARP means

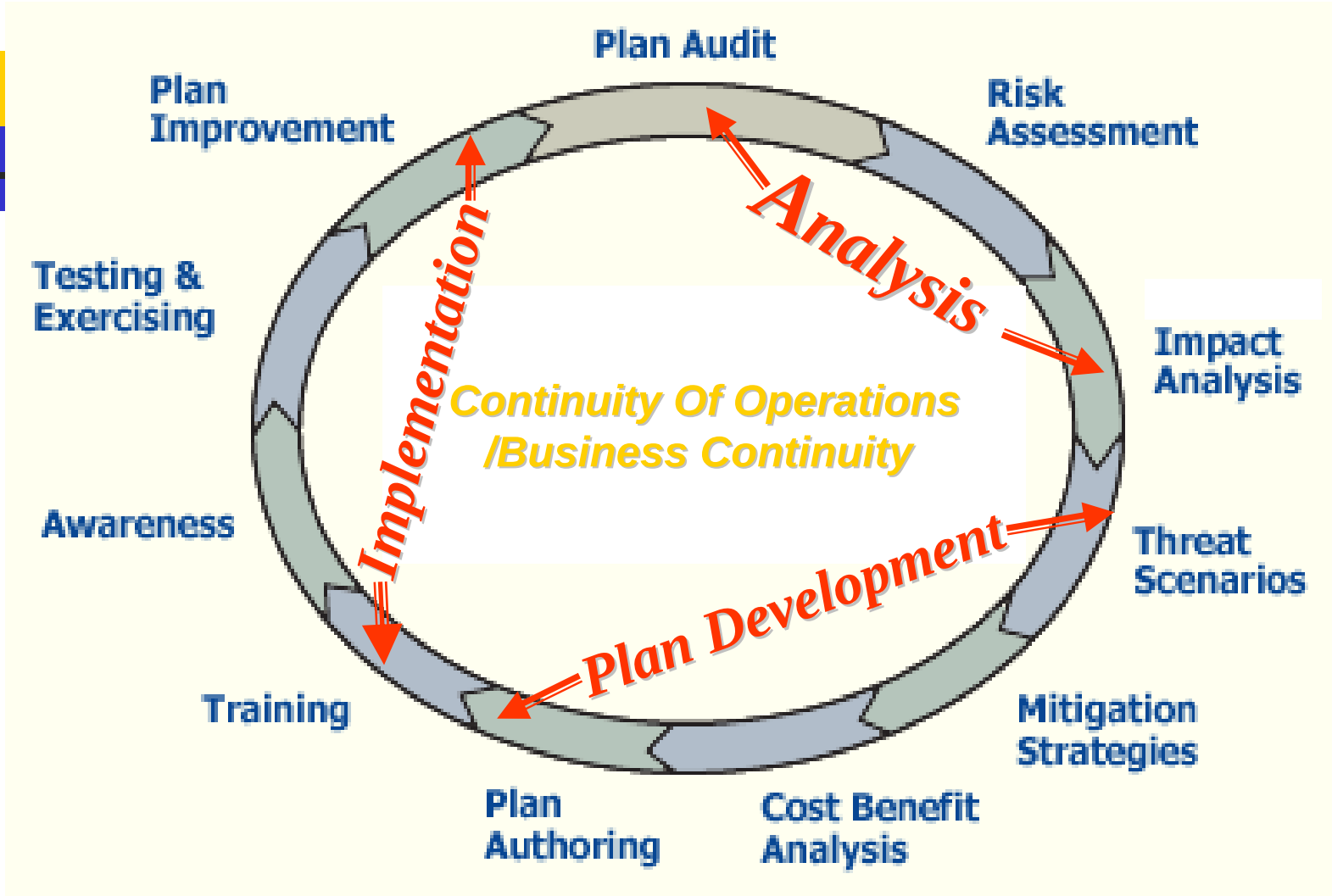
‘As Low As Reasonable Practicable’

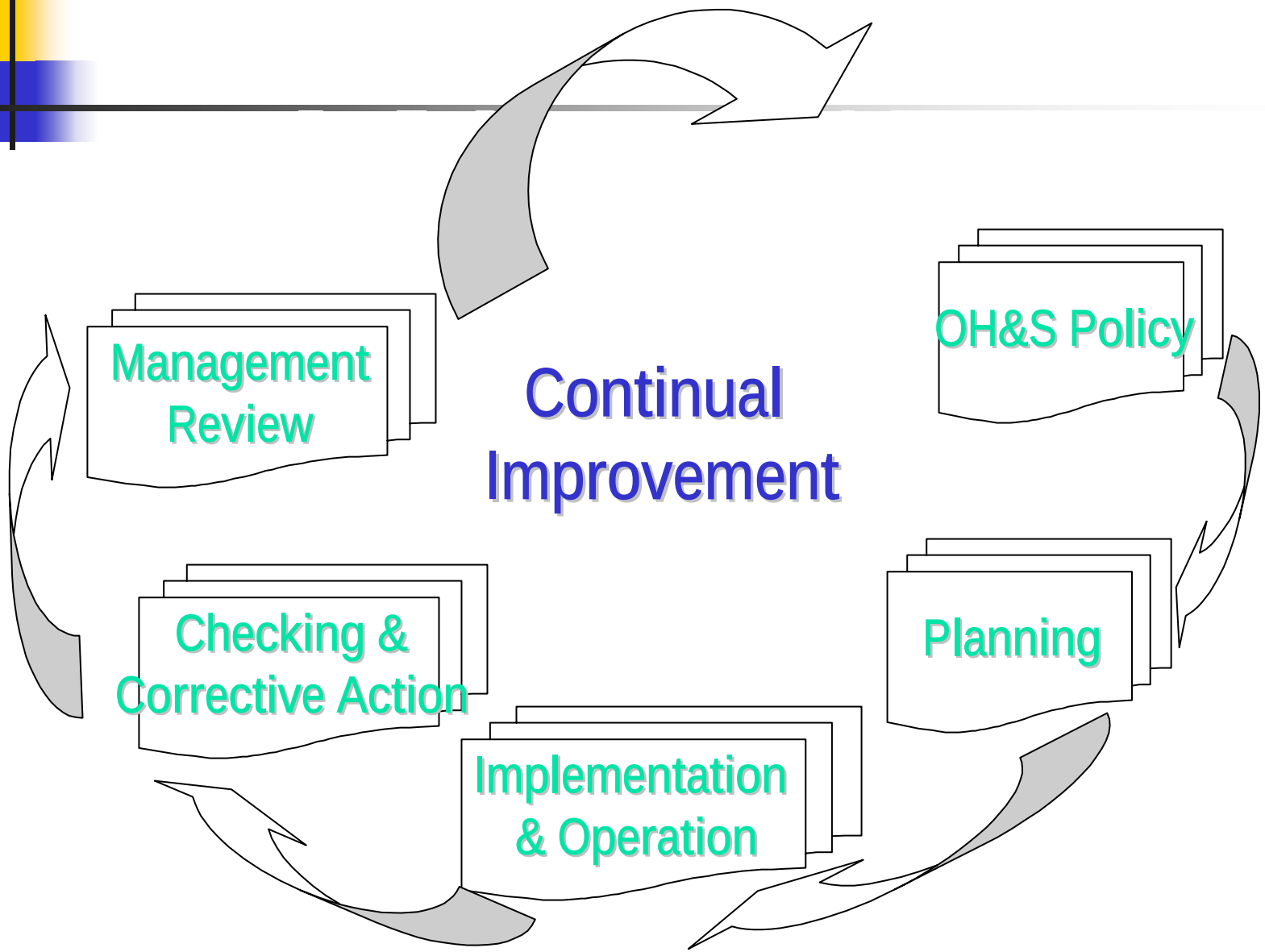
ALARP demonstration means:

To demonstrate that the project & associated systems and HSEMS will enable the facility to be operated & maintained safely such that residual risks to HSE are tolerable

Conclusion


Regulatory
Legal
Employees
Financial
Sales
The most cost-effective COOP/BCP plans will be based on priorities determined by a comprehensive Impact Analysis - IA.
Other
Customer
Production
Recovery plans must be tested at least once a year to effectively support critical business requirements..


Plan Audit
Risk Assessment
Impact Analysis
Threat Scenarios
Mitigation Strategies
Cost Benefit Analysis
Plan Authoring
Training
Awareness
Testing & Exercising
Plan Improvement
Analysis
Plan Development
Implementation
Continuity Of Operations /Business Continuity


Management Review
OH&S Policy
Continual Improvement
Checking & Corrective Action
Planning
Implementation & Operation

? ?

If,

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Equals,

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

Then,

K + N + O + W + L + E + D + G + E
11 + 14 + 15 + 23 + 12 + 5 + 4 + 7 + 5 = 96%

H + A + R + D + W + O + R + K
8 + 1 + 18 + 4 + 23 + 15 + 18 + 11 = 98%

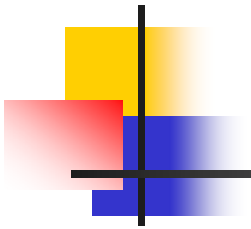
Both are important, but the total falls just short of 100%

But,

A + T + T + I + T + U + D + E
1 + 20 + 20 + 9 + 20 + 21 + 4 + 5 = 100%

Safety really is about attitude. Make 100% Safe Behavior your choice both ON and OFF the job

- With the support of InWEnt- Germany we are launching a programme of Capacity development in iDRM (industrial Disaster Risk Management)
- Kindly read the Risk Wise



Thanks