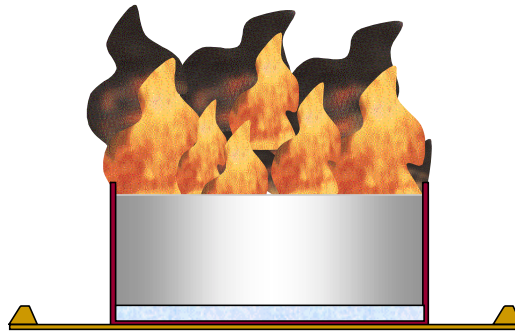


Fire and Explosion Hazard Management (FEHM)

The following extracts from a presentation given at an international oil and petrochemical safety conference illustrate the main concepts behind effective Fire and Explosion Hazard Management (FEHM):

FIRE AND EXPLOSION HAZARD MANAGEMENT



A formalised approach to establish a *SITE - SPECIFIC, RATIONALISED, RELEVANT* and *COST - EFFECTIVE* policy to reduce potential fire and explosion consequences.

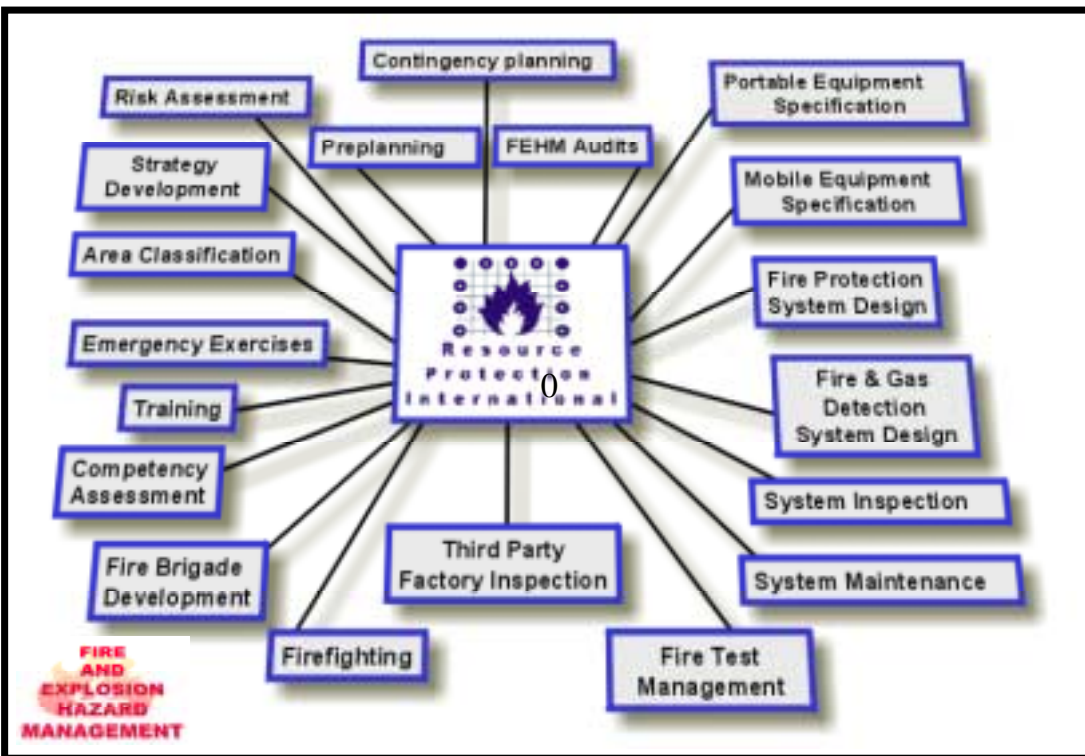
FIRE AND EXPLOSION HAZARD MANAGEMENT

Why is it needed by the operator?

Fire and Explosion consequence reduction can be achieved in many ways :-

Fire prevention, fire detection, emergency shutdown, passive protection, active systems, salvage etc.

As every facility works in its own special environment, it is important to develop the optimum, cost - effective incident consequence reduction strategy/policy taking into account local conditions, the plant's criticality and an incident's potential effect on life safety, the environment, asset value, continued operations and company image.



FIRE AND EXPLOSION HAZARD MANAGEMENT

Legislative position

Previously, fire protection practices used in high risk industries have been very prescriptive in approach and not based on the real needs of a particular facility. However, due to major incident experience, internationally recognised authorities such as NFPA (U.S.A.) and HSE (U.K.) have set a requirement for “goal setting” performance based standards within a “Safety Case”.

Consequently, it is now recommended that fire responders assess and justify requirements for cost effective fire protection resources based on credible major incident scenarios.

FIRE AND EXPLOSION HAZARD MANAGEMENT

LEGISLATOR AND
OPERATOR
BOTH **RISK** BASED



NO CONFLICT!

FIRE AND EXPLOSION HAZARD MANAGEMENT



HOWEVER!

*Policies based on only meeting
legislation are not necessarily
appropriate or sufficient.*

FIRE AND EXPLOSION HAZARD MANAGEMENT

Legislator Concerns



Personnel Safety

Societal Safety



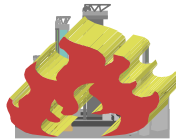
Environment



National interests

FIRE AND EXPLOSION HAZARD MANAGEMENT

Additional Operator Concerns



Asset Loss

Business Interruption






Public image

The Solution : -

**FIRE AND EXPLOSION
HAZARD
MANAGEMENT**

***Based on evaluation of
credible scenarios***

FIRE AND EXPLOSION HAZARD MANAGEMENT

-  **Objective** To establish, in an auditable way, a formal, site-specific justified and cost effective fire and explosion damage mitigation policy appropriate to the criticality and overall needs of the facility
-  **Methodology** **Fire and Explosion Hazard Management** using fire scenario analysis
-  **Criticality factors**
 - Life Safety
 - Environment
 - Continuity of Operations
 - Asset / Investment value
 - Public image

FIRE AND EXPLOSION HAZARD MANAGEMENT

Identify fire hazards

Develop fire scenarios

Evaluate escalation consequences

Select scenarios for further analysis

Develop provisional policy

Compare response options

Select cost-effective option

Finalise response policy / strategy

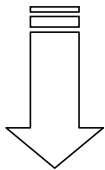
Provide response resources

Prepare to use resources

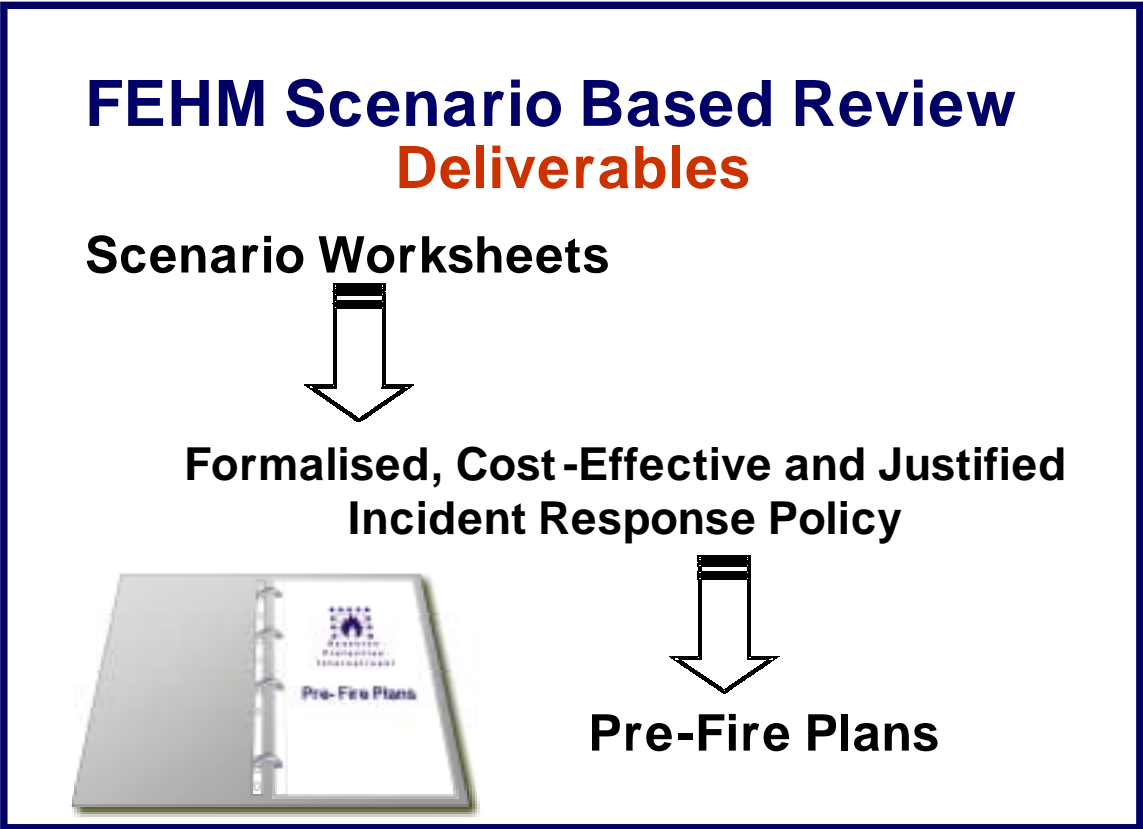
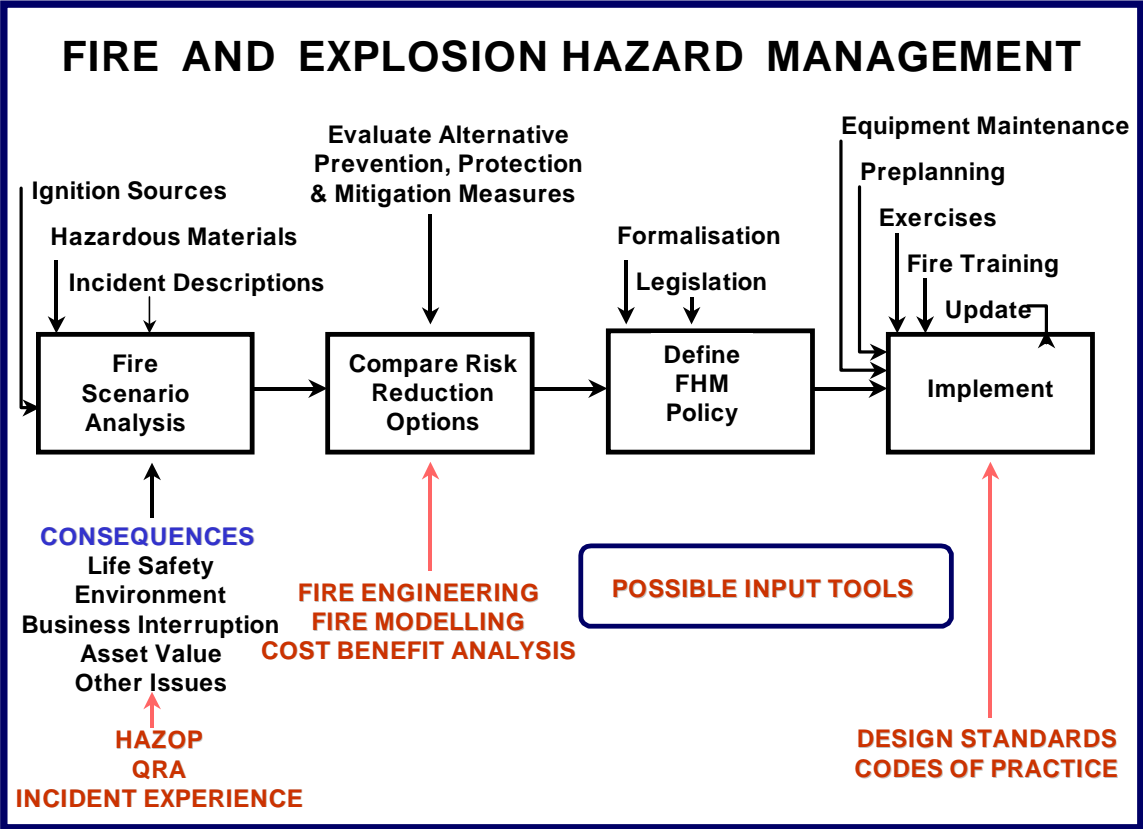
Test resources

Maintain resources

Review / update policy



Iterate



FIRE AND EXPLOSION HAZARD MANAGEMENT

Extreme cases :-



Burndown Policy No damage mitigation measures.



In practice, most facilities will adopt a policy somewhere between the two extremes

Total Protection



Full automatic shutdown.

Comprehensive passive protection.

Sophisticated automatic fire and gas detection / protection systems.

Full portable / mobile equipment back-up.