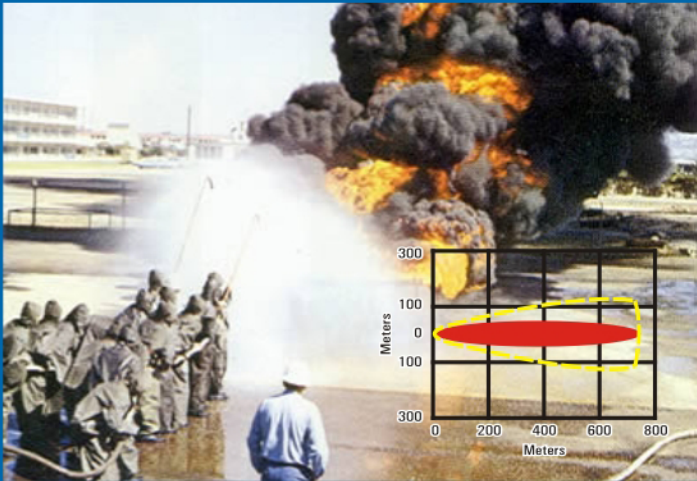




**ASIA PACIFIC RISK MANAGEMENT
SERVICES PVT LTD.**

www.aprms.com

RISK AND CONSEQUENCE ANALYSIS



GAP ANALYSIS AT DESIGN STAGE

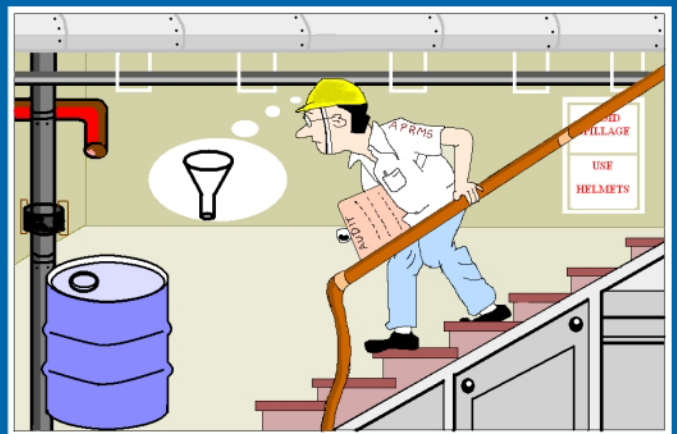
During project stage corporates including multinational, approach APRMS to review shortcomings in plant layout, suggestion on safety hardware, hazardous area classification(electrical), fire protection system to enable them to plug the gaps in their projects at the blue print stage.

Gaps that originate at the inception and left unattended becomes a burden throughout the lifecycle of a plant. APRMS not only identifies such gaps but also provides cost effective solutions.

Risk can be mathematically expressed as a product of probability of an event occurring and its consequence. While probability is difficult to be stated precisely for an event, the consequences can be mathematically modelled using well known software as well as hands on calculations.

APRMS can carryout consequence analysis by identifying initially risks of fire, explosion and toxic release in the operations and expresses it in terms of area affected. These are often represented by contour drawn on the topography plan.

Such an exercise enables a corporate to understand its exposure on the surrounding and also to get a clear perception of the risk so that it constantly reviews the status of safeguards that acts as a layer of protection against such occurrences and mitigation resources.



AUDITS

Audits are being executed at regular intervals to find out any inadequacies in the process, equipment and maintenance of the plant. This will improve the short comings in upkeeping and safeguarding the plant. Audits are generally relating to safety, electrical and fire audits. Safety Audits are carried out in detail or as per IS 14489 depending on the clients requirements.

APRMS has carried out audits in Petrochemical, Pharma industries etc.



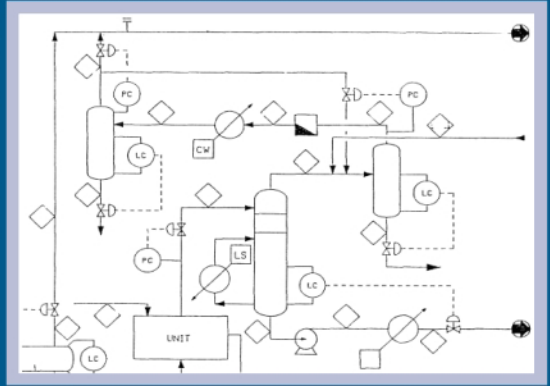
HAZARD AND OPERABILITY STUDIES (HAZOP)

In the past inspite of designing process plants as per the codes, several major accidents have occurred due to lack of safeguards in the instrumentation which leads to hazards and operability problems. To address this ICI introduced hazard and operability studies.

The purpose of hazop study is to identify the risk that may manifest while operating the plant when a deviation in the intended process parameters occur.

HAZOP is therefore carried out by a group of specialist engineers on the process and instrumentation diagrams of the existing and the proposed plants by using certain guide words which will bring about the likely deviations and its consequence .

The risk levels such consequence can impose on the plant is represented as a risk matrix to prioritize the action to be taken as 'critical', 'semicritical' and 'noncritical'. Such a study is presently extensively carried out not only at the



behest of the statutory personnel but also to create business continuity and to keep healthy bottom line.

APRMS has carried out several such studies for refineries, bulk drug units and other chemical processing units. Its personnel have wide range of experience in carrying out HAZOP for both continuous process plants as well as batch processing units. Very similar to HAZOP, what if analysis is also carried out by the team for the batch processes to identify the risks involved.

FIRE PROTECTION SYSTEM

To control the magnitude of fires and explosions, the key element in plant design is a robust fire protection system. An effective fire protection system can not only fight fire but also can prevent fires assuming dangerous proportions. Several codes and standards exist for designing such systems for hazardous industries. Judicious application of these codes and standards call for experience in understanding the risks. APRMS and its associates have extensive experience in carrying out designing of fire protection system for chemical processing units and other major industrial complexes. This includes early warning systems such as detectors, manual call points, fire hydrant system and auto spray systems. For the existing plants APRMS is called for by the Industries to carry out fire audit and audit to evaluate its adequacy and upkeep.



The risk based insurance study addresses the present insurance cover and their inadequacies, premium ratings and its rationalisation. This helps in buying proper insurance policies with conditions and warranties. This often results in reduction in premium. The study further addresses adequacy in valuation/sum insured in both material damage and loss of profit.

CLAIMS MANAGEMENT

Claim papers are prepared along with the client. It helps in effective presentation of difficult area of the claim with respect to the insurance policies. This results in faster and proper claims settlements.



TRAINING

Training is a basic requirement to make awareness of safety in the processing plant. APRMS do have highly experienced personnel to conduct safety training for various plants.

APRMS personnel have participated in seminars as a guest lecturer in India.

Safety Training classes have been conducted in SEBIC, Saudi Arabia on Fundamentals of Safety, Material Management, Electrical Safety, Risk Management etc. by APRMS personnel.

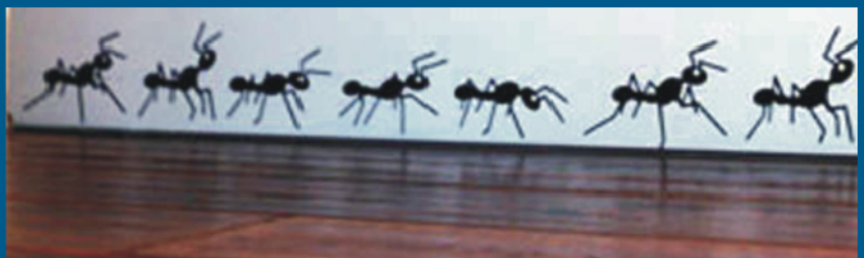
EMERGENCY PREPAREDNESS AND DISASTER MANAGEMENT

Emergency Preparedness and Disaster Management are the preconditions for a successful long term business continuity for an organization. It aims at protecting people, property, profit and environment. An emergency preparedness plan requires identification of loss scenarios, available resources to prevent occurrence of such losses and build adequate resources to deal with accidents to reduce loss to the organization. This needs to be followed up with trained man-power for an effective response during an incident and a detailed recovery plan once the disaster is over, to establish production back to the pre incident level.

APRMS has personnel who have exposure in dealing with large magnitude of losses and also personal experience in formulating emergency preparedness and on site disaster management plan.

BUSINESS CONTINUITY PLAN

In spite of early recovery after a disaster through effective recovery plan, business faces loss of market and contractual liability if obligations are not met due to major accident in the plant. Business Continuity Plan (BCP) addresses this aspect by keeping production continuity by pre planning. It identifies fall out of an accident and situations that prevent continuous supply of the end product into the market. BCP not only looks into one's own manufacturing facility interruption but also interruption that may occur due to an



incident in the vendor's premises who supply critical raw material to the plant. Creating such a BCP requires a team effort, most of them drawn within the organization. APRMS as an external consulting firm will help to formulate an effective BCP for the organization by getting involved with the BCP team of the organization.

TOTAL RISK MANAGEMENT

Most of the areas mentioned, often treated separately in a corporate. For instant safety, corporate insurance, project management of a new venture are often treated in isolation. The implication of one area on the other is generally not fully perceived. Risk Management effectively knits all of them. Risk Management views implications of management changes, transfer of assets, impact on assets by new risks, proper layout and risk control measures in project stage optimization of insurance both for the projects and running plant holistically to achieve best results with the utilization of correct measure of resources. It also helps cross breeding of the views from one area to the other. It

helps each department to appreciate the problem of the others and implications of the decisions beyond their department is the key benefit derived out of Risk Management programme.



ACCIDENT INVESTIGATION

To examine accident scenerio to identify the root causes to prevent future occurences and arrive at suitable recommendations on damage minimisation.

APRMS have carried out fire / flood accident investigations to ascertain the failure for various industries along with insurance claims.

HAZARDOUS AREA CLASSIFICATION (HAC)

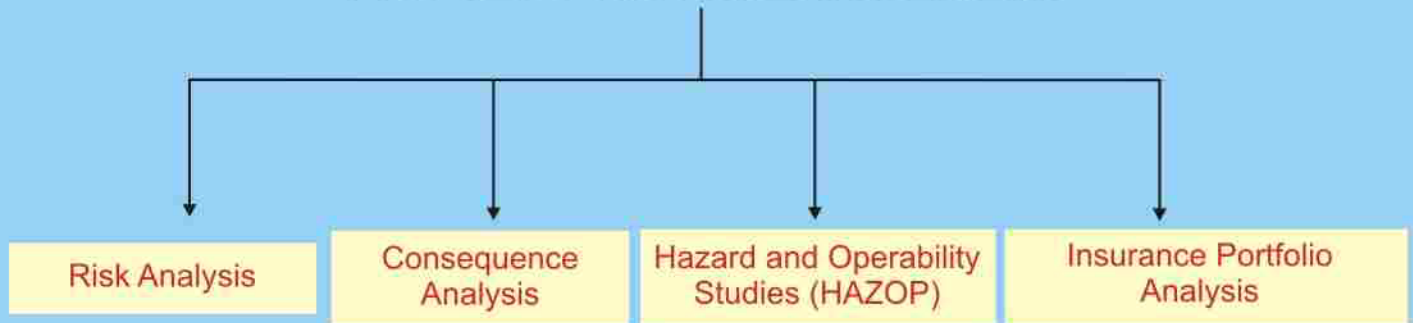
Corporates having manufacturing processes involving flammable materials have utilised the services of APRMS in arriving at HAC to provide appropriate electrical installations that would prevent fire/explosion due to electricity source ignition.



SERVICES

Risk Management employs a holistic approach to study the technical, legal and financial aspects of the organization. Based on requirements we offer the following services

PROCESS RISK MANAGEMENT



OTHER SERVICES

Fire fighting/ Fire Hydrant system design
Accident Investigation and Reporting
Emergency Planning
Training in Risk Management Techniques

Valuation of Assets
Business Continuity Plan
Hazardous Area Classification
Gap Analysis & Thermography

Asia Pacific Risk Management Services Pvt Ltd.

Mookambika Complex

6th Floor, No. 4, Lady Desika Road, Mylapore, Chennai - 600 004.

Phone: 044 4551 8182 / 2498 7163 website : www.aprms.in ; E-mail: aprms@vsnl.net