



# Hazard, Risk Assessment & Management Consultancy Services



THE GREEN PEOPLE

## **GREEN CIRCLE CONSULTANTS INDIA (P) LTD.**

*(An ISO 9001:2008 Certified Company)*

*EHS, Risk & Quality  
Consulting Engineers & Trainers*

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**Green by Design**

## About Us

We are leading Consulting Engineers in diverse field of Environment, Safety, Health & Hygiene, Risk - Engineering & Quality Systems, having Business Operations in **India, Middle East, Far East & Nigeria.**

## Our Team

We have 103 persons working in the field of Environment, Safety & Fire, Pharma, Chemical, Biotechnology, Mechanical, Electrical, Instrumentation, Metallurgical, Geology, Science, Computer, Business Management & Finance, in India

## We Offer

A unique background in chemical Process Safety, Risk Analysis, Management, Design, Operations, Inherent Safety, Fire Protection, and Security that provides our clients with practical, cost-effective solutions for the challenges of Process Safety Management, Risk Management.

- Protect employee and public health and safety
- Reduce the chance and impact of process accidents and intentional harm
- Communicate risk to the public
- Comply with government regulations
- Avoid adverse environmental impact
- Reduce liability exposure and
- Improve business performance.



## HazOp (Hazard & Operability Studies)

- HAZOP is a structured critical examination of plant or processes undertaken by a team of experts in order to identify any possible deviations from an intended design, along with the consequent undesirable effects concerning safety, operability and the environment. The possible deviations are generated by rigorous questioning, prompted by a series of standard 'guidewords' applied to the intended design.
- HazOp is the most widely used methodology as per IEC 61882 (2001) HazOp Studies.
- Typical process safety documents required are
  - Process Description
  - Process Flow Diagram(PFD's)
  - Process/Operational Parameters
  - Piping & Instrumentation Diagram(P&ID's)
  - Equipment elevations
  - Equipment data sheets
  - Plot Plan

GCCIPL has software for HazOp Pro & HazOp study etc.

## Risk Assessment (Qualitative)

A Risk Assessment is simply a careful examination of what, in our work, could cause harm to people, so that we can weigh up whether we have taken enough precautions or should do more to prevent harm. This can be combined with OHSAS 18001 requirements of HIRA.

### Methodology

- Identify the hazards
- Decide who might be harmed and how
- Evaluate the risks and decide on precautions
- Record our findings and implement
- Review your assessment and update if necessary
- Plan Corrective action for significant Risk

## Fire Risk Assessment

**Fire Risk Assessment (FRA)** gives you independent & unbiased assessment of Fire Risks & Management of your facility and proactively addresses all aspects from fire risk potential, existing mitigation measures, reliability & emergency preparedness. The FRA addresses the overall Fire Safety Measures to effectively protect your people & assets.

### **Fire Risk Assessment includes:**

- Facility walkthrough & Inspections
- Review of Licenses, Permits & Maintenance
- Interactions/Interviews

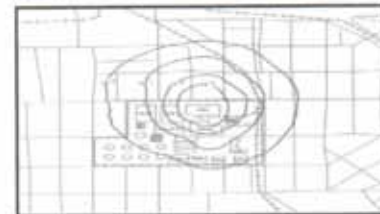
## Quantitative Risk Analysis (QRA)

QRA involves the most detailed estimation

- The expected frequency and consequences of potential accidents associated with a facility or operation,
- Utilizing hazard modeling and statistical techniques.
- The frequency of occurrence of hazardous events is estimated by employing a statistical approach utilizing available failure databases.

For such analysis, GCCIPL has the ability to perform detailed MCLS consequence modeling of vapor cloud, fire & explosion hazards with dispersion modeling.

GCCIPL has software for this study like PHAST 6.53 Version, PHAST PRO & SAFETI.

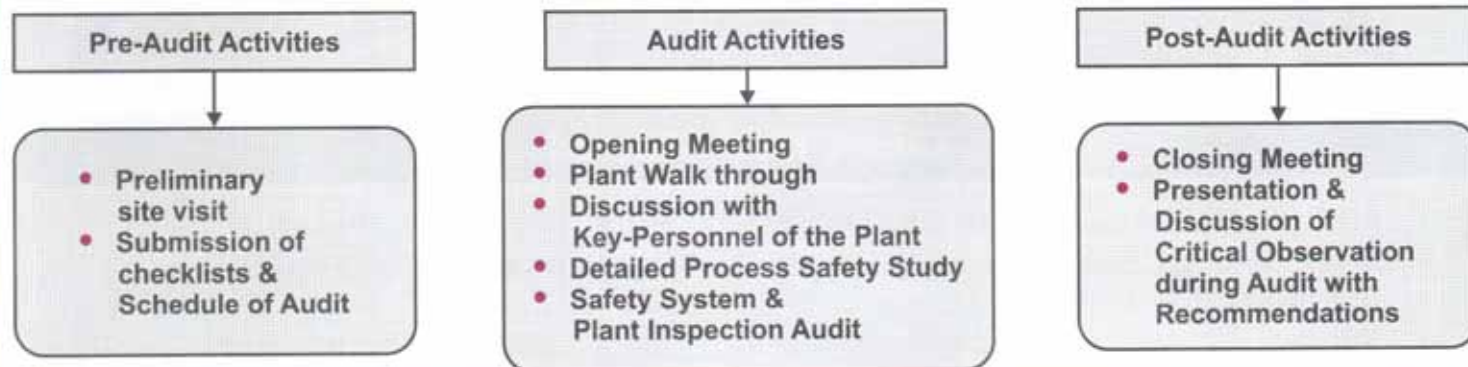


## Safety Audit

According to the provision of Rule -10 (4) of MSIHC Rules, 1989 (Amended 2000), it is mandatory for an occupiers to conduct Safety Audit of Industrial Activity once in a year. It is a part of management system, by which each & every activity of a company pass through Systematic critical examination. The Safety Audit is conducted by a team of experts qualified & experienced in the respective fields. GCCIPL also has expertise in Electrical Safety Audit & area classification.

**Standards:** NZ/AS 4801, IS: 14489 & BS 8800 (UK)

### Methodology:



## Job Safety Analysis (JSA)

A Job Safety analysis separates the tasks people perform into subtasks. For each subtask, hazards and risks are sought by considering the hazards that might exist and what might go wrong to cause injury or ill health. The tools and equipment which are used and the environment in which the task is carried out must also be considered.

The JSA process requires:

- Identification of hazards associated with steps involved in each principal task,
- Assessment of the level of risk associated with the identified hazards and
- Developing risk control strategies to eliminate or reduce the level of risk associated with each principal task along with Risk.

## Failure, Modes, Effects & Criticality Analysis (FMECA)

Failure, Modes, Effects & Criticality Analysis is a methodology to identify & analyze:

- All potential failure modes of the various parts of a System
- The effects these failures may have on the system
- How to avoid the failures or mitigate the effects of the failure on the systems

## Process Safety Management (PSM)

Process Safety Management is the application of the management to the identification, understanding, & control of process hazards to prevent process related injuries & incidents.

- The PSM Standard applies to any process where highly hazardous chemicals are used, stored, moved, handled, processed, or manufactured. These chemicals include:
  - Toxic or reactive chemicals such as chlorine, sulfur dioxide, ammonia, nitric acid, hydrochloric acid, and hydrofluoric acid are incorporated.
  - Flammable liquids or gases.
- The PSM Standard which is basically OSHA's standard 29 CER consists of 14 elements that affected facilities must address. The elements are integral to a complete program and therefore exhibit some interdependency. They are:
  - Process Hazard Analysis
  - Pre-startup Safety review
  - Hot Works permit
  - Incident Investigation
  - Process Safety Information
  - Operating Procedures
  - Compliance Audit
  - Emergency Planning & Response

### Electrical Safety Audit

Electrical Safety Audit can provide a through review of the Electrical System, this includes identify Potential Electrical Hazards flaws in design systems, maintenance etc.

### Hazardous Area Classification

Comprehensive Hazardous Area Classification based on IEC-60079-10 Standard with drawing and recommendation on the same.

We also offer Dow Fire & Explosion Index Calculation, HAZAN (ETA & FTA), HAZID, LCA, Area Classification, LCA, What If Analysis, Hazard Calculation (AS 4343) etc. studies

### Client List - Partial

- ADNOC (Abu Dhabi National Oil Company)
- Sohar Steel L.L.C., Oman
- Indian Rayon & Industries Ltd.
- Narmada Chematur Petrochemicals Ltd
- Gujarat Alkalies and Chemicals Ltd.
- Asian Paints Ltd.
- Cadila Healthcare Ltd.
- Huber Chemicals (I) Pvt. Ltd.
- Bayer India Limited
- Indian Oil Tanking Ltd.
- Lupin Ltd.
- Reliance Industries Ltd.
- Powerica Limited
- Nirma Limited
- Heubach Colour Ltd.
- INEOS ABS (India) Ltd.



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