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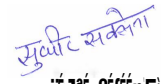

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FROM THE DESK

Though industrial safety management attempts to control hazards and prevent accidents but it does guaranty complete freedom from accidents. This necessitates planning and preparations to mitigate the consequences of mishaps, just in case, in spite of all efforts, they occur. An emergency plan contains processes for preparedness, response, palliation, and recovery in the event of an emergency. Repercussions of several industrial accidents would not have been that harsh if proper emergency planning would have been done. There are several statutes and standards on emergency planning, but still there is a large gap between the reality and the necessity. It is desirable that the compliance to various statutes should be in letter as well as spirit. Realistic anticipation and detailed planning for emergencies can save huge losses and valuable lives.

The cover article of this issue illuminates some of related concerns and attempt to bridge the aforesaid gap.

Editor In-Chief

EMERGENCY PLANNING - ONSITE AND OFFSITE

S.B.MATHUR

INTRODUCTION

Before looking into the ingredients of emergency planning -- onsite & offsite, it is very important to understand the relationship between industrial process safety management and emergency planning. Industrial process safety management basically deals with the control of hazards associated with the industrial processes. It attempts to choose intrinsically safer processes and apply protective measures for accident prevention. Process safety management never guarantees freedom from accident. It only attempts to prevent them to the extent our existing knowledge of the hazards and practicability of the protective measures. Here comes the role of emergency planning which takes care of this residual risk. An emergency denotes a situation, which demands immediate action for preventing serious losses due to an unforeseen, unplanned and sudden happening. The word emergency plan thus means a document in which thoughts about such possible unforeseen, unplanned and sudden happenings have been recorded along with the arrangements for the immediate action for loss mitigation. Emergency planning is not an alternative to process safety management but is supplementary to it and it takes care of the risk, which remained uncovered even after best possible safety management. The difference between an on-site emergency plan and an off- site emergency plan is that of their domains. An on-site emergency plan, which is required to be prepared by the management of the facility, confines itself to, within the industrial facility. An off-site emergency plan, which is required to be prepared by the district authorities, covers all such credible happenings within an industrial estate and includes measures for mitigation of losses to the property, environment and people outside the industrial facilities.

In our country several statutes make it mandatory for the factory management and the district authorities to prepare on-site and off-site emergency plans. Some of these statutes include:

1. The Factories Act, 1948.
2. Manufacture, Storage and Import of Hazardous Chemical (MSIHC) Rules, 1989.
3. Control of Industrial Major Hazard (CIMAH) Rules, 1990.
4. The Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996

Significance of emergency planning can be better understood by studying the consequences of some of the past accidents and their investigation reports.

- In Kansas City oil fire disaster, the life of several firemen could have been saved if the procedure for fighting the fire of a gasoline bullet had been laid down in an emergency plan and the firefighting crew had been informed not to stand in front of the weakest part i.e. the dished end, of such tanks.
- In well-known Feyzin disaster, the explosion of 12 LPG tanks could have been prevented if the delay in announcing the emergency had been avoided and proper arrangements for cooling the tank and diverting the vehicular traffic had been made.
- In Dupont (France), where 146 people got killed in a dance hall, which caught fire, a large number of people could have escaped if the exit gates had not been closed for preventing unauthorized entry.

In accidents pertaining to toxic releases, number of casualties could have been reduced if the public in the near vicinity of the site had been informed about onset of the mishap by blowing a siren and the information about the wind direction, escape directions and antidotes had been provided.

A good emergency plan should necessarily include the following elements:

1. Identification of hazards and possible emergencies.
2. Assessment of hazards.
3. Procedures for rapid actions.

Some well known techniques widely used for identification and assessment of hazards include:

1. Data Analysis of past accidents.
2. Investigation of accidents.
3. Job Safety Analysis.
4. Preliminary Hazard Analysis.
5. Hazard and Operability Study.
6. “What If” Analysis.
7. FMECA (Failure Mode Effect & Criticality Analysis).
8. Safety Audit.
9. Dow Index & Toxicity Index.
10. Hazard Analysis (Fault Tree Analysis & Event Tree Analysis).
11. Dispersion Modeling.

The list of potential emergencies should include:

1. Emergencies within the facility.
2. Emergencies in the neighborhood that could affect your facility.

While trying to foresee the possible hazards and emergencies, we should consider the following factors:

1. Historical: Types of emergencies that have occurred in past in the facility or nearby such as earthquake, hurricane, tornados, terrorism, hazardous spillage, fire, etc.
2. Geographical: Proximity to floodplains, proximity to large storage of hazardous materials, proximity to main transport routes (railways and airports etc.), proximity to nuclear plants, etc.
3. Technological: What could occur if safety systems fail, process parameters deviate, heating/cooling system failure, emergency notification system failure etc.
4. Human errors: What emergencies employee’s errors, poor training, carelessness, misconduct, substance abuse, fatigue, etc. can cause.
5. Human errors: What emergencies employee’s errors, poor training, carelessness, misconduct, substance abuse, fatigue, etc., can cause.
6. Physical: What emergencies could result due to design or construction of the plant such as layout of equipment, evacuation routes and exits, facilities for

storing combustibles, oxidizers, explosives, proximity to shelter area, etc.

Procedures for rapid action should essentially include:

1. Availability of resources: This should include consideration of both types of resources, personnel as well as equipment.
2. Mutual Aid: This should define with whom, extent of help possible and whom to be contacted.
3. Which team to respond: Action by designated teams needs to be well defined, whether the team members have been trained in the actions expected from them.
4. Means of communication: This should include separate communication systems for declaring emergency within the plant and for informing to outside public, means of communication amongst the emergency response team members and also with the control room and outside agencies.
5. Transport system: Transport system for tackling the emergency should include transport for equipment, personnel and other essential supplies. Transport system will also be required for the injured persons, valuables, and hazardous material and for other people.

While planning emergency equipment the following need to be considered:

1. Suitability
2. Adequacy
3. Ease of usage
4. Reliability
5. Location and ease of accessibility
6. Marking for quick identification
7. Record of periodic examination

Emergency route maps: The emergency plan should include identification of routes, alternate routes, availability of emergency team, maintaining emergency routes free from parking of vehicles and storage of junk, adequacy of emergency routes as per the number of people expected to use them and emergency illumination of such routes.

Building and site maps: Such maps are of immense use during tackling of emergencies. Such maps should clearly indicate:

1. Utility shutoffs
2. Water hydrants
3. Water main valves
4. Water lines
5. Gas main valves
6. Gas lines
7. Electrical cutoffs
8. Electrical substations
9. Storm drains
10. Sewer lines
11. Floor plans
12. Alarm and annunciators
13. Location of each building (include name of building, street name and number)
14. Fire extinguishers
15. Fire suppression systems
16. Exits
17. Stairways
18. Designated escape routes
19. Restricted areas
20. Hazardous materials (including cleaning supplies and chemicals)
21. High-value items
22. Emergency control rooms.

Emergency Key personnel: Emergency plan should clearly designate emergency key personnel such as Site main controller, Site incident controller, First aid providers, Operators for emergency shut off, Engineering staff, Roll callers, Running messengers, Traffic controllers, etc.

Site main controller: The site main controller should be the chief executive of the facility with some of his deputies as his alternates. It must be ensured that either the chief executive or one of his alternates is always present in station all the time. Duties of site main controller, in an emergency, should include: -

1. Decision regarding whole works.
2. Directing actions from emergency control room.
3. Assessing situation.
4. Declare emergency (if not already done).
5. Communication with internal & external emergency services.
6. Decide probable further course of emergency situation & start actions.
7. Directing for shutdown of the plant.
8. Ensuring proper treatment of injured persons & counting of the persons.
9. Ensure traffic control.
10. Keep record of events.
11. Communicate with media & Govt. agencies.
12. Control Rehabilitation.
13. Directing for evacuating of the personnel.

Site incident controller: The senior most technical person should be designated as the site incident controller. Some of his deputies should also be designated as alternates. Site incident controller should take charge of the situation in absence of the site main controller. It should be ensured that at least one site incident controller is present at the site all the times. Duties of the site incident controller, during an emergency, should include: -

1. Take charge of the situation till main controller arrives.
2. Assess situation & initiate emergency procedures.
3. Take actions for controlling the incident, securing safety of people, material, plant & environment.
4. Direct rescue, firefighting at site.
5. Coordinate emergency services at site.
6. Search for injured, causalities & arrange for proper aid.
7. Evacuate non-essential people.
8. Maintain communication with main controller.
9. Preserve evidence.

Details required to be furnished in an on-site emergency plan, as per schedule 11 of the MSIHC Rules, 1989, are as under:

1. Name and address of the person furnishing the information.
2. Key personnel of the organisation and responsibilities assigned to them in case of an emergency:

3. Outside organisations if involved in assisting during on-site emergency:
   a. Types of accidents
   b. Responsibility assigned
4. Details of liaison arrangement between the organizations.
5. Information on preliminary hazard analysis:
   a. Types of accident
   b. System elements or events that can lead to a main accident.
   c. Hazards.
   d. Safety relevant components
6. Details about the site:
   a. Location of dangerous substances
   b. Seat of key personnel.
   c. Emergency control room.
7. Description of hazardous chemicals at plant site:
   a. Chemicals (quantities and toxicological data)
   b. Transformation if any, which could occur.
   c. Purity of hazardous chemical
8. Likely dangers to the plant.
9. Enumerate effects of:
   a. Stress and strain caused during normal operation.
   b. Fire and explosion inside the plant and effect if any of fire and explosion outside.
10. Details regarding:
    a. Warning, alarm and safety and security systems.
    b. Alarm and hazard control plans in line with disaster control and organisational precautions.
    c. Reliable measuring instruments, control units and servicing of such equipment.
    d. Precautions in designing of the foundation and load bearing parts of the building.
    e. Continuous surveillance of operations.
    f. Maintenance and repair work according to the generally recognised rules of good engineering practice;
11. Details of communication facilities available during emergency and those required for an off-site emergency.
12. Details of firefighting and other facilities available and those required for an off-site emergency.
13. Details of first aid and hospital services available and its adequacy.

Details required to be furnished in an off-site emergency plan, as per schedule 12 of the MSIHC Rules, 1989, are as under:

1. The types of accidents and release to be taken into account
2. Organisations involved including key personnel and responsibilities and liaison arrangements between them.
3. Information about the site including likely locations of dangerous substances, personnel and emergency control rooms.
4. Technical information such as chemical and physical characteristics and dangers of the substances and plant.
5. Identify the facilities and transport routes
6. Contact for further advice e.g. meteorological information, transport, temporary food and accommodation, first aid and hospital services, water and agricultural authorities.
7. Communication links including telephones, radios and stand-by methods.
8. Special equipment including fire fighting materials, damage control and repair items.
9. Details of emergency response procedures.
10. Notify the public.
11. Evacuation arrangements.
12. Arrangements for dealing with press and other media interests.
13. Longer term cleanup.

Mock Drill: A good emergency plan essentially necessitates a state of preparedness under all circumstances and the efficacy of arrangements therein can be assessed only by conducting periodical full scale mock drills. Trained manpower is an essential ingredient of any emergency plan. Mere provision of sophisticated equipment without trained manpower is futile. For handling an unforeseen situation like managing a Chemical Disaster, training of all personnel concerned is an inevitable input. To acquire necessary knowledge and skill, all relevant personnel should be given periodic training regarding their duties and that of their department. Objective of the full-scale mock drill will be to:

- Gauge the preparedness of the emergency plan including detailed planning and keeping of all equipment in good fettle.
- Integrate the operational response to measure overall performance of the exercise.
- Measure performance with regard to restoration.

During these full scale mock drills, following aspects should be closely watched

- Assembly of staff.
- Handling of rescue equipment.
- Logging of events.
- Functioning of generator sets, lighting equipments.
- Preparedness of first-aiders and availability of medical equipment.
- Knowledge of duties by the key persons.

An industrial installation should have a well-balanced process safety management programme along with a well-rehearsed on-site emergency plan. District authorities should prepare off-site emergency plans for the industrial estates under their jurisdiction.

REFERENCES:

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b. Control of Industrial Major Hazard (CIMAH) Rules, (1990).

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ENHANCING SAFETY CULTURE BY IMPLEMENTATION OF DESIGNED SAFETY EDUCATION PROGRAMME*

DR.R.K.ELANGOVAN

INTRODUCTION

Safety is a primary requirement for nuclear installations taking into account the risks and consequences of a failure in them. Culture is the shared assumptions of a group that it has learned in coping with external tasks, and dealing with internal relationships and it is a product of social learning. Safety performance can be improved by enhancing the safety culture. Safety culture aims in sharing common attitude, values, norms and beliefs among all stake holders of nuclear installations. Ensuring safety culture is a continuous process by which all the stake holders share a common attitude, belief, values and norms on risks and safety. A positive attitude to safety, however, is not in itself sufficient to create a safety culture. Senior management needs to give leadership in quite specific ways. A more fruitful approach is to emphasize safety and loss prevention as a matter of professionalism[1].The attitude of top management to safety must be continuous and interactive[2]. The route to safe plants is to have a 'Safety Culture'. One element of a culture is discipline and safety culture amounts to 'operating discipline'. Lack of discipline was the direct cause of some of the accidents[3]. The management should take adequate and concerted measures to improve safety culture. The organizations should believe that the safety can be improved for ensuring and enhancing safety culture. The Safety education is the only available method in effecting changes in attitudes, values, beliefs and norms among all stake holders. This paper deliberates on designing a specific safety education program to nuclear installations with the objective of enhancing safety culture in them. The implementation of this program at predetermined intervals would enhance the safety culture, resulting in improved safety by ensuring common perception among all stake holders towards risks and safety.

CONCEPTUAL FRAME WORK

CULTURE

Culture is a pattern of basic assumptions – invented, discovered or developed by a given group as it learns to cope with its problem of external adaptation and internal integration – which has evolved over time and is handed down from one generation to the next[4].

SAFETY CULTURE

The Nuclear Regulatory Commission defines safety culture as "A reflection of the values, which are shared throughout all levels of the organization and which are based on the belief that safety is important and that it is everyone's responsibility." It is also defined as "assembly of characteristics and attitudes in organizations and individuals which establishes that as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance[5]".

STAGES OF DEVELOPMENT OF SAFETY CULTURE

There are three stages of development of safety culture and they are as follows[6]:

Safety based on rules and regulation

The organization sees safety as an external requirement, and the external requirements are those of government, the legal framework and the regulatory bodies. There is little awareness of the behavioural and attitudinal aspects of safety. Safety is seen as a technical issue, to be achieved by compliance with rules and regulations.

Safety becomes an organizational goal

The organization considers safety to be an important organizational goal, even in the absence of external requirements. Safety is dealt with in terms of targets or goals, with accountabilities for achieving the goals specified.

Safety can always be improved

An organization in this stage has adopted the idea of continuous improvement and applied the concept to safety. There is a strong emphasis on communication, training, management style and improving efficiency and effectiveness. People within the organization understand the impact of cultural issues on safety.

SAFETY EDUCATION

Safety education is the pro-active development of knowledge, attitude, behaviour and skills of stake holders on safety. Good safe attitude, behaviour and skills evolved by the safety education contribute to overall accident reduction program in the industry. Safety education for all levels of management personnel and workers on a continual basis is vital for the success of the safety education program. The objectives of the safety education are:-

- To develop safety consciousness among employees.
- To build up knowledge, skill and attitude towards and safety.
- To ensure safe work performance on the part of stake holders.

SAFETY EDUCATION PROGRAM

It is a type of program which has been designed with specific modules on safety pertinent to Nuclear Installations and provided to the stake holders to enhance their knowledge, attitude, behaviour and skills with the objective of empowering safety culture.

SAFETY EDUCATION PROGRAM MODULE

'Module' is defined as a unit or period of education and it is a self-contained and self-sufficient unit of instructions in a formalized and complete learning package. It helps the learner understand the crux of the subject, to develop the required qualities and to apply the learned knowledge in practice. All the learning resources are contained within each module and suited when an educational program is developed for large number of learners and need to be repeated many times.

METHOD

Safety culture is the dominant aspect of the organizational culture and existence of safety policies, plans, objectives, monitoring, risk assessment and control system, safety

**The paper was presented in the international conference on Topical Issues in Nuclear Installation Safety. The conference was organized by International Atomic Energy Agency hosted by Atomic Energy Regulatory Board, India at Mumbai from November 17-21, 2008.*

management information system, audits, safety training, reviews, systems and involvement of senior management are tangible evidence of safety leadership, which is important for developing a positive safety culture. An essential element of any safety culture is proper training, especially in the diagnosis of abnormal situations, so that those involved will react appropriately in emergency[3]. Safety education to all the stake holders on a continual basis is the primary requirement in ensuring and enhancing safety culture in Nuclear Installations. The steps involved in methodology adopted in this paper includes safety culture enhancement process, role of safety education in promoting safety culture, design of safety education program and implementation of the designed safety education program.

SAFETY CULTURE ENHANCEMENT PROCESS

The enhancement of safety culture consists of the following steps[6]:

1. Top management commitment to launch a safety culture enhancement program.
2. Self assessment of the present safety culture.
3. Formation of an assessment team to perform the self-assessment.
4. Gaining common understanding and frame of reference of safety culture through training of both senior management team and appointed assessment team.
5. Development of the assessment tools.
6. Performing self – assessment, analyzing the results and presentation of findings.
7. Development of an improvement program based on the results of self-assessment.
8. Implementation of the improvement program.
9. Follow-up of effects of the improvement program through a new self-assessment of safety culture.
10. Peer review of the organization's safety culture by an external team.

The safety education program is one such improvement program aimed at enhancing safety culture among all the stake holders.

ROLE OF SAFETY EDUCATION IN PROMOTING SAFETY CULTURE

Imparting of safety education results in development, safety awareness, skills, attitude, beliefs, norms and behaviour among the trainees. The safety education needs are to be identified with a view to promote safety culture among all stake holders. The safety education essentially consists of the following:

- Training the managers/supervisors/workers/contractors in the basic concepts of organizational culture.
- Workers / Contract Workers participation in safety management.
- Creating awareness, skill, attitude, norms, beliefs and awareness among stake holders towards risks and safety.
- Emergency preparedness and response planning.
- Legal compliance.
- Communication of safety issues to the public.

DESIGN OF THE SAFETY EDUCATION PROGRAM

The steps of the designed safety education program module by retaining the essential steps of the universally accepted and acclaimed models such as Hopper's Model (1981), UNESCO Model and UGC Curriculum Model, are as follows:-

- Introduction
- General objectives
- Specific objectives
- Motivation
- Overview
- Content specification
- Development of the contents and consolidation of the learning outcomes.

Self enrichment questions in the form of objective questions are presented at the end of each capsule of the modules. The designed safety education modules for enhancing safety culture in nuclear installations along with concerned stake holders are presented in Table 1.

IMPLEMENTATION OF THE DESIGNED SAFETY EDUCATION PROGRAM

The designed safety education modules should be imparted to among all stake holders by conducting the safety education program on a continual basis for effective enhancement of safety culture in nuclear installations. The frequency for conducting the designed safety education program should be predetermined before actual commencement of the implementation of safety education programs.

RECOMMENDATIONS

The designed safety education modules should be suitably adapted to each group of stake holders by taking into account of their educational level, responsibilities, duties and expected functions of them in nuclear installations. The periodicity at which the implementation of the designed safety education modules is also an important factor in achieving the expected enhancement in safety culture, which requires to be decided in advance by taking into account of all factors like practicability, need, requirements and availability of personnel and facilities into consideration.

CONCLUSION

The continual implementation of the safety education program enhances the sharing of common attitude, values, norms and belief among all stake holders on risk and safety in Nuclear Installations. The safety education program prescribes objectives and motivation towards learning to effect attitudinal changes among stake holders, thus ensuring enhancement in safety culture. To ensure effectiveness, these designed modules should be updated on a continual basis by incorporating the developments in the field of nuclear safety.

The enhancement in safety culture in nuclear installations would change the organizational culture, thus ensuring and enhancing the safety in Nuclear Industry.

*****_The paper was presented in the international conference on Topical Issues in Nuclear Installation Safety. The conference was organized by International Atomic Energy Agency hosted by Atomic Energy Regulatory Board, India at Mumbai from November 17-21, 2008._

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Table 1: Designed Safety Education Modules with Concerned Stake Holders

Module No.	Module Subject	Capsules	Stake Holders					
			Manage-ment	Direct workers	Indirect workers	Visitors	Govt.	Public
I.	Basic concepts	Safety, Accident, Prevention of accidents, Need for prevention of accidents, Costs of accidents	•	•	•	•	•	•
II.	Legal Statutes and Requirements	Relevant legislations, Agreements, Compliance requirements, Strategies for compliance, Documentation	•	•	•		•	
III.	Safety with nuclear reactors	Pressure system, Protective systems, Radio- activity health effects, Major hazard control, Nuclear hazard control	•	•	•		•	
IV.	Nuclear Hazard Assessment	Probabilistic risk assessment, Accident consequences and scenarios, Fire, Explosion – steam and hydrogen explosion, Effects of Natural disasters like earthquakes, floods and tsunami, Computer error, Human error	•	•	•		•	•
V.	Nuclear Pressure Systems	Inspection techniques, Fracture mechanics, Seismic qualification of equipments Ageing						
VI.	Nuclear Reactor Operation	Human factors, Process operators, Display and alarm system, Control room, Operating procedures, Operator training	•	•	•			
VII.	Radiation Safety	Radiation – Concept, Types and effects of radiation exposure, Radiation pollution, Radiation exposure levels, Dangers due to radiation exposure	•	•	•	•	•	•
VIII.	Process Control and Safety Management System	Process control system, Safety system and Auxiliary system, Participative Safety Management, Safety Committee.	•	•	•			
IX.	Design for reliability of structures, systems and components	Basic rules, Provisions for in-service testing, maintenance, repair, inspection and monitoring, Human factors, Equipment qualification, Other design consideration.	•	•	•			

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Table No. 1: Designed Safety Education Modules with Concerned Stake Holders (contd.)

X	Plant Safety	Operating limits and conditions, Safety limits Limiting of safety system setting, Limits and conditions for normal operation, Surveillance requirements, Operating procedures, Emergency operating procedures.	•	•	•			
XI.	Functional Safety	Safety functions and safety related system, Challenges in achieving functional safety, System integrity, Safety integrity levels	•	•	•			
XII.	Control Systems Assessment	Significance of control system, safety related system / protection system (trips and interlocks) Sensing, Actuators and signal conversion, Remote diagnostic system, process control systems	•	•	•			
XIII.	Human Error	Types of human error, Operator stress, Human error assessment methods, Human error prevention strategies	•	•	•	•		
XIV.	Emergency Planning	On-site emergency planning and Off-site emergency planning	•	•	•	•	•	
XV.	Site security	Types of intentional threats, Consequences of threats, Protective system against such threats, Emergency procedures, Emergency preparedness and response planning.	•	•	•	•	•	
XVI.	Nuclear Incidents, Accidents and Disasters	Case studies on Nuclear accidents, Nuclear incidents and Nuclear disasters	•	•	•		•	

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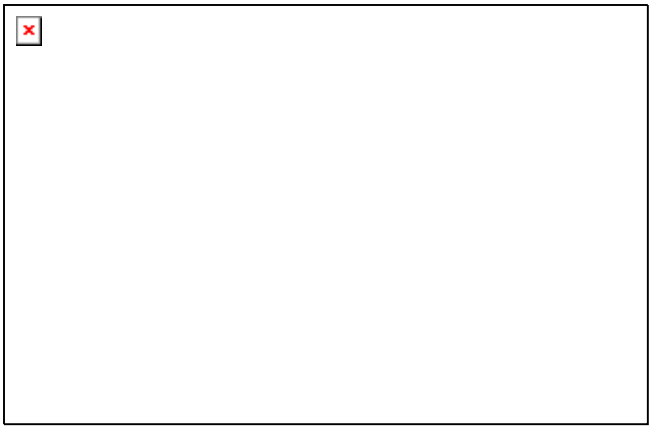
**The paper was presented in the international conference on Topical Issues in Nuclear Installation Safety. The conference was organized by International Atomic Energy Agency hosted by Atomic Energy Regulatory Board, India at Mumbai from November 17-21, 2008.*

1ST NATIONAL FILM & BOOK EXHIBITION ON OCCUPATIONAL SAFETY & HEALTH ON 29TH MAY, 2009 AT SCOPE COMPLEX, LODHI ROAD, NEW DELHI

The 1st National Film & Books Exhibition on Occupational Safety & Health was organized by DGFASLI, Ministry of Labour & Employment, Govt. of India, Mumbai, at SCOPE Complex, Lodhi Road, New Delhi on 29th May 2009. The exhibition was well attended by 316 participants, which included officials from Ministry of Labour & Employment, DGFASLI, Trade Unions, Factory Management. Officials from Chief Inspector of Factories, ILO and other government organisations.



Shri S.K.Srivastava, Additional Secretary to the Govt. of India, Ministry of Labour & Employment delivering the key-note address. Seated from left to Right: Shri. S. K.Saxena, Director General, DGFASLI, Mumbai; Shri S. Krishnan, Special Secretary to the Govt. of India, Ministry of Labour & Employment; Smt. Sudha Pillai, Hon'ble Secretary to the Govt. of India, Ministry of Labour & Employment and Shri. G.M.E.K.Raj, Director (Safety), DGFASLI, Mumbai

The inaugural function of the film Exhibition was presided over by Shri S. Krishnan, Special Secretary to the Govt. of India, Ministry of Labour & Employment and the programme started with Saraswati vandana. Shri. S. K.Saxena, Director General, DGFASLI welcomed Smt. Sudha Pillai, Hon'ble Secretary to the Govt. of India, Ministry of Labour & Employment, Shri S. Krishnan, Special Secretary, Shri S.K. Srivastava, Additional Secretary, CIFs of varius State/UTs, Delgates and Press & Media officials. During the welcome address Shri. S. K.Saxena, Director General, told that National Film & Book Exhibition on Occupational Safety & Health was organized as a part of the year 2008-09 as celebration of industrial safety and health.

After the welcome address, Shri S.K. Srivastava, Additional Secretary to the Govt. of India, Ministry of Labour & Employment, in his key-note address said that one of the powerful ways to prevent accidents or to inculcate safety and health culture at work place is dissemination of occupational safety and health (OS&H) knowledge to the industries through books and films. While books update your knowledge, video effect of films leaves an everlasting impression in the mind of audience that catches attention, enhances understanding, retention of the subject matter and overcomes monotony. The industries have very limited access to the OS&H literature & films kept at libraries of DGFASLI and other OS&H institutions in the country. One of the ways to get access to the latest OS&H knowledge of international standards to all stakeholders was considered possible through an open exhibition of OS&H books and films. The stakeholders can select and buy the books and films of their choice and maintain a library of the same in their enterprises for educating and motivating their workforce. In his concluding remarks, he wished the exhibition a great success.

The Presidential address was delivered by Shri S. Krishnan, Special Secretary to the Government of India, Ministry of Labour & Employment. He said it is difficult to bring about voluntary compliance through statutory measures. Willing compliance is possible only when a positive safety & health culture is developed in the factories and development of positive safety & health culture is possible through training and re-training of employees. Training and education of workers is an important issue which needs to be addressed using effective mass–media communication. DGFASLI, Ministry of Labour & Employment has prepared a number of short documentary films in the past on various subjects to promote safety and health awareness amongst the industrial workers. These films have been used in training programmes and diploma courses, workshops, etc. all over the country and the feedback received is quite encouraging.

After the presidential speech, Shri S. Krishnan, Special Secretary invited Smt. Sudha Pillai, Hon'ble Secretary to Govt. of India, Ministry of Labour & Employment, to inaugurate the 1st National Film & Book Exhibition on Occupational Safety & Health by lighting the lamp.

After lighting the lamp, Smt. Sudha Pillai, Hon'ble Secretary addressed the august gathering. In her inaugural speech, the Hon'ble Secretary urged the entrepreneurs to prioritise safety as similar to other activites like production, design, marketing, etc. During the recent years, India has emerged as a country having implemented higher OS&H standards at workplace at par international ones. This has led to achievement of economic growth, showing the direct linkage of productivity with occupational safety and health. The industry may therefore consider an amount spent on implementing better OS&H systems at workplace as their true investment. Hon'ble Secretary also highlighted that during the years 2001 – 2005, the frequency rate of total industrial injuries per lakh Man-days worked have come down from 3.24 to 1.64, the rate of fatal Injuries have increased from 0.07 to 0.08. The incidence rates of injuries, fatal as well as total, per thousand workers employed in factories however show a significant reduction in occurrence of injuries, she also told that in view of above, we should continuously be watchful and make our safety management systems foolproof for fatal injuries. Finally Hon'ble Secretary suggested organising Film & Book exhibition on yearly basis at different locations in the country so as to reach all OS&H stakeholders and update their latest safety related literature.

After the inaugural speech of the Hon'ble Secretary, the documentary film named "Silicosis – A Killer Disease" produced by DGFASLI was screened. After the screening of the film, Shri. G.M.E.K.Raj, Director (Safety), DGFASLI, Mumbai delivered the vote of thanks.

Later, Smt. Sudha Pillai, Hon'ble Secretary also inaugurated the book exhibition. There were 10 book & film Exhibition stalls arranged by DGFASLI. Films Division of India, Ministry of Information & Broadcasting, New Delhi was one among them displaying CDs of OS&H films.

After the morning tea break, the following films were screened in the auditorium:

1. *Safety in Construction Industry* produced by DGFASLI, Mumbai.
2. *Occupational Health Hazards (B&W)* produced By Films Division, Mumbai
3. *Safety in Ship-breaking Industry* produced by DGFASLI, Mumbai.
4. *Safety Orientation and Contractor Safety* produced by M/s. Coastal Training Technologies India Pvt. Ltd., Chennai.
5. *Stay Healthy with Computer* produced by DGFASLI, Mumbai.
6. *Seismic Second - The Bhopal Disaster* produced by IFFCO Aonla, Uttarpradesh.

After the lunch break, the following films are screened:

1. *Safety Can Save You (B&W)* produced by Films Division, Mumbai
2. *Beware of Asbestosis* produced by DGFASLI, Mumbai.
3. *Safety Induction For Workmen* produced by M/s L&T, ECC Chennai
4. *A film on OS&H* produced by M/s Durgapur Steel Plant

After screening of the above films, Shri G.M.E.K Raj, Director (Safety), DGFASLI, requested the delegates to give feed-back about the book and film exhibition and he also requested Shri S.K. Saxena, Director General, DGFASLI, to chair the concluding session. All the delegates expressed that this type of book and film exhibition needs to be conducted every year and this programme was very educative and informative. One union representative expressed that DGFASLI may advise the film producers and book publishers to sell films and books on OS&H on concessional rates so that the industries and the other concerned agencies can easily purchase such valuable books and films. One of the management representatives suggested that apart from the Industrial Safety, other areas like home safety, road safety, safety in unorganized sector are required to be covered. One delegate requested to explore the possibility of distributing the DGFASLI films free of cost to the industries and he appreciated the efforts taken by the DGFASLI in organizing an unique programme of this type and he congratulated DGFASLI officials for successfully organizing this programme.

Shri S.K. Saxena, Director General, DGFASLI., in his concluding remark, informed delegates that the efforts will be taken by DGFASLI to screen not only the films produced by DGFASLI, even other films on OS&H can also be screened on the national network in the national language. Further, Director General informed that the films produced by DGFASLI are in 8 regional languages and these films can also be screened on regional network so that wide publicity on OS&H is made in all regions through national and regional languages. He expressed sincere thanks to delegates and their organization for actively participating in the programme and he requested all the delegates to spread the message on OS&H to the other persons who were not able to participate in this programme and he invited the delegates to join for a cup of tea.

26TH CONFERENCE OF DOCK SAFETY INSPECTORS AT KOCHI

Seated third from left, Shri S.K.Saxena, Director General, DGFASLI, Mumbai along with the participants.

The 26th Conference of the Dock Safety Inspectors was held at Kochi on 27-28 May, 2009. The conference was inaugurated by Shri N. Ramchandran Nair, IPS, Chairman, Kochi Port Trust. In his inaugural address, he appreciated the service rendered by the dock safety in the field of safety, health and welfare of the dock workers. He emphasized that for the productivity and the overall health of the organization, it was necessary that the organization itself is healthy and only then the safety and health of the workers can be ensured. He also laid stress on standardization of various protocols and that should be made compulsory for everybody. He informed the gathering that the Kochi Port was an 'E-Port' and that all the activities were being computerized so that they are integrated and the error margins are brought down.

The Director General and Chief Inspector of Dock Safety, Shri S.K.Saxena, is his key-note address brought forward the new challenges facing the Dock Safety Inspectorates. He highlighted that the privatization of the port and employment of contract and private workers was an important issue. He congratulated the Kochi Port Trust for being the first 'E-Port' in the country and said that this would help the track of people and accidents. He said that the conference was important as it would be discussing the amendments suggested by the committee constituted for this purpose.

In the technical sessions, a presentation was made on the amendments to the Dock Workers (Safety, Health and Welfare) Act, 1986 and Regulation 1990 and the Inspectors deliberated on the various amendments suggested by the working group.

CENTRAL LABOUR INSTITUTE: MUMBAI

During the quarter Central Labour Institute carried out several studies, workshops, training programme etc. which are described here.

Studies

Assessment of Airborne Chemical Contaminants in the Work Environment of a Chemical Factory in Gujarat (Mandre, M.K., Industrial Hygiene Division, Central Labour Institute, Mumbai)

Assessment of Compressed Breathing Air Quality of a Maritime Training Institute in Maharashtra (Mandre, M.K. Industrial Hygiene Division, Central Labour Institute, Mumbai)

Assessment of Airborne Chemical Contaminants in the Work Environment of a Chemical Factory in Gujarat (Mandre, M.K., Industrial Hygiene Division, Central Labour Institute, Mumbai)

Study on Illumination and Ventilation Conditions of a Chemical Factory in Maharashtra (Subhash Chandra, Environmental Engineering Division, Central Labour Institute)

Study on Consequence Analysis of a Power Plant in Haryana (Gautam, S.S., Sharma, S.C., Major Hazard & Chemical Safety Division, Central Labour Institute, Mumbai)

Study of Dispersion Modelling for Instantaneous Release of Carbon Monoxide of a Producer Gas Plant in Orissa (Gautam, S.S., Sharma, S.C., Major Hazard & Chemical Safety Division, Central Labour Institute, Mumbai)

Study of Dispersion Modelling for Propane Storage Area of a Automobile Plant in Orissa (Gautam, S.S., Sharma, S.C., Major Hazard & Chemical Safety Division, Central Labour Institute, Mumbai)

Investigative Study of a Multi-fatal Accident of a Shoe Manufacturing Industry in Haryana (Gautam, S.S., Sharma, S.C., Major Hazard & Chemical Safety Division, Central Labour Institute, Mumbai)

Training Programme

Industrial Hygiene Division conducted three days training on *Selection & Quality Assurance for Effective use of Personal Protective Equipment* from April 27-29, 2009. The training programme was attended by twelve participants from seven organizations.

The Staff Training Division conducted two training programmes during the period April-June 2009. The training programme on *Effective supervision for Results* was held from April 20-22, 2009 and was attended by eight participants from two organisations. Another training programme on *Methodologies for Trainers in Safety, Health and Welfare at Work* was attended by seven candidates from six organisations.

Industrial Psychology Division conducted a three days programme on *Developing on the Job-Counselling Skills* was from April 22-24, 2009. The programme was attended twelve participants from five organisations.

Industrial Psychology Division conducted a three days programme on *Motivation for Safety, Health and Productivity* was from May 27-29, 2009 and was attended by eleven participants from seven organisations.

Industrial Medicine Division conducted its 17th *AFIH Course* from April 1, 2009 to June 30, 2009 for Factory Medical Officers. Fifty medical officers from fifty organisations attended the course.

Major Hazard & Chemical Safety Division conducted a training programme on *Safe Handling of Chemicals for Safety Committee Members* from May 27-29, 2009. Eleven participants from four orgainsations attended the training programme.

The Safety Division conducted three days collaborative training programme With NSC Maharashtra Chapter on *Industrial Safety* at CLI from May 13-15, 2009. Twenty two delegates from sixteen organisations participated in the programme.

The Safety Division conducted two weeks collaborative training programme on *Safety & Health in Ship Building & Ship Repair* for Goa Shipyard Ltd. Goa with NSC Maharashtra Chapter at CLI from June 29 to July 10, 2009. Twenty two supervisors from Goa Shipyard Limited participated in the programme.

The Safety Division conducted three days in-plant training programme on *Advanced Safety Health and Environment for Officers* and *Advanced Course on Safety Management for Supervisors* at Goa Shipyard Training Center, Goa from May 18-22, 2009 for forty nine officers and supervisors.

Workshops/Seminars/Conference

Major Hazard & Chemical Safety Division conducted a workshop on *Hazard Operability Study* from April 1-3, 2009. Seven participants from four organisations attended the workshop.

Paper/Presentation/Talks

Dr. R. K. Elangovan, Director, Safety Division, presented a paper on *Protect Your Planet – Control Global Warming* in the national workshop on *World Environment Day* held at Naval Dock Yard, Mumbai on June 05, 2009.

Dr. P.P.Lanjewaar, Dy. Director, Medical Division delivered a talk on *Artificial respiration for electrical shock & CPR* in a specialized programme on electrical safety arranged by National Safety Council, India in Mumbai on April 17, 2009.

REGIONAL LABOUR INSTITUTE, KANPUR

During the quarter from April 2009 to June 2009, Regional Labour Institute, Kanpur carried out several studies, workshops, training programmes etc. which are described here.

Studies

Safety Audit at a Thermal Power Plant in Uttar Pradesh (Mathur, S.B., Brij Mohan, Safety Division and Chakraborty A.K., Industrial Hygiene Division, Regional Labour Institute, Kanpur)

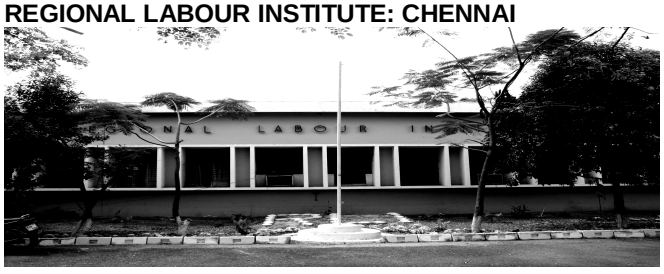
Safety Audit at a Paper Manufacturing Factory in Uttarakhand (Brij Mohan, Safety Division and Dwivedi, S.K., Industrial Hygiene Division, Regional Labour Institute, Kanpur)

Assessment of Capabilities & Management of Occupational Safety and Health in the State of Chhattisgarh (Shrivastatva, S.K., Industrial Safety Division, Rustagi, N.K., Staff Training Division and Bhattacharya, Champak, Medical Division, Regional Labour Institute, Kanpur)

Training Programme

Industrial Hygiene Division conducted four days training programme on *Prevention & Control of Fire in Industry* from April 13-16, 2009. The training programme was attended by eighteen participants from ten organizations.

REGIONAL LABOUR INSTITUTE: CHENNAI



During the quarter from April 2009 to June 2009, Regional Labour Institute, Chennai carried out several studies, workshops, training programmes etc. which are described here.

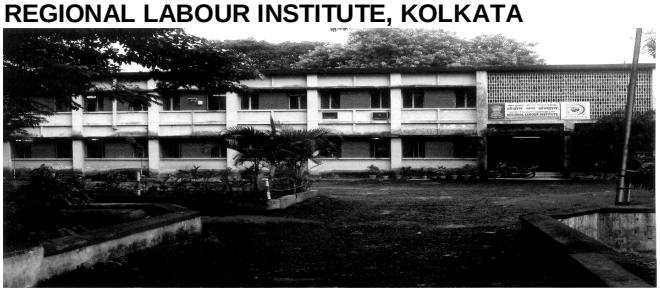
Training Programmes

Industrial Safety Division conducted in-plant training programme on *Safety and Health in Construction Industry* on April 30, 2009. The training programme was attended by twenty-two participants from one organization.

Paper/Presentation/Talks

Shri S.Bharathi, Director (Safety), presented a paper in a seminar on *Safety and Health in Thermal Power Plants* on May 12, 2009 organised by Directorate of Factories, Andhra Pradesh & National Safety Council, Andhra Pradesh Chapter and NTPC, Ramagundam.

REGIONAL LABOUR INSTITUTE, KOLKATA



During the quarter from April 2009 to June 2009, Regional Labour Institute, Kolkata carried out several studies, workshops, training programmes etc. which are described here.

Training programmes

Safety Division conducted a two days training programme on *Industrial Safety* for the students of Post Diploma in Industrial Safety Course for the session 2008-09 of Dr. Ambedkar Memorial Institute of Industrial Safety from April 8, 2009 to April 9, 2009. Twenty-eight students attended the programme.

Safety Division conducted a five days training programme on *Safety in Construction Industries* from May 11-15, 2009. Ten Management and Executive level participants from eight industries attended the programme.

Industrial Medicine Division conducted the AFIH course during the year 2009. The course commenced from April 1, 2009 and successfully completed on June 30, 2009. Ten medical officers from ten organisations attended the course.

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Assessment of Airborne Chemical contaminants in the Work Environment of a Chemical Factory in Gujarat (Mandre, M.K., Industrial Hygiene Division, Central Labour Institute, Mumbai)

The study was conducted in a factory manufacturing Polystyrene products. The study was carried out to evaluate the exposure of Styrene & Ethyl Benzene vapours to the workers in the plant. During sampling, in Pelleting section, Process plant, near storage tank and instrumentation laboratory, the airborne concentrations of Styrene & Ethyl Benzene were found well below permissible limit of exposure. Some recommendations to improve the quality of Personal Protective Equipment, education training & workmen and provisions of workplace monitoring at the plant itself were suggested.

Assessment of Compressed Breathing Air Quality of a Maritime Training Institute in Maharashtra (Mandre, M.K., Industrial Hygiene Division, Central Labour Institute, Mumbai)

The Maritime Institute imparts training to the seafarer personnel. Breathing air is used by the trainees of the institute. Breathing air cylinders are filled with compressed air by using compressors. Evaluation level of contaminants like Oil mist, Carbon Monoxide, Carbon Di-oxide and Particulate Matter in the compressed breathing air has been undertaken. These contaminants in breathing air the standards as laid down by British Standard BS 4275 as well as Standard CAN3-Z180.1-M85 of the Canadian Standard Association.

Assessment of Airborne Chemical contaminants in the Work Environment of Chemical Factory in Gujarat (Mandre, M.K., Industrial Hygiene Division, Central Labour Institute, Mumbai)

The study was conducted in a Fertilizer & Chemicals plant of Gujarat. Petro-chemicals, fertilizers and other chemicals were produced in the plant. Assessment of airborne levels of Ammonia, Sulphur Dioxide, Oxides of Nitrogen, Benzene, Particulate Matters, Hydrofloric Acid, etc. was carried out at various locations in the plant. The air borne concentrations of Benzene, sulphur Dioxide, Ammonia and Particulate Matters at some locations were found exceeding the PLE/TLV limits. Recommendations such as to improve the working conditions, housekeeping and maintenance of all exhaust systems and use of personal protective equipment were suggested.

Study on Illumination and Ventilation Conditions of a Fertilizer Factory in Maharashtra **(Subhash Chandra, Environmental Engineering Division, Central Labour Institute)**

The illumination and thermal stress studies were carried out in a chemical plant in Maharashtra with the objectives to measure the prevailing illumination levels and thermal conditions at various work stations in the plant during the day time as well as night time and to suggest remedial measures. The observations were recorded at twenty-five different locations of the plant using necessary thermal stress and illumination related equipment. The findings were discussed in the light of the standard prescribed under Section 17 & 13 of the Factories Act, 1948. The study revealed that the thermal conditions exceeded the prescribed limits at most of the locations and illumination levels were below the prescribed normative limits at some places. Several recommendations were given for improvement of the working conditions.

Study on Consequence Analysis of a Power Plant in Haryana **(Gautam, S.S., Sharma, S.C., Major Hazard & Chemical Safety Division, Central Labour Institute, Mumbai)**

The study was carried out to find out the likely damages in case of loss of containment of HFO and LDO storage tanks 4000 KL and 1000 KL respectively and the distances that are likely to be affected by toxic chlorine in case of release from tonners. It was found that 1% lethal burns are possible upto distance of 26m from dyke wall in case of fire in the dyke wall for the HFO tank of 4000 KL. For LDO tank of 1000 KL, 1% lethal burns are likely upto about 18m from the dyke wall. The distances of levels dangerous to life in case of 60 min exposure of chlorine gas on release from vapour phase from an aperture of 0.5" upto a distance of about 360m in windward directions at day time 50%clouds and wind speed 1.5m/s. For wind velocities of 3 and 5 m/s, the distances were about 320 and 310m under the similar conditions. For liquid releases from 0.5" aperture, the 1% lethal distances were found to be 1600m, 1100m and 1000m respectively for wind speeds 1.5m/s,3m/s and 5m/s respectively.

Study of Dispersion Modelling for Instantaneous Release of Carbon Monoxide of a Producer Gas Plant in Orissa **(Gautam, S.S., Sharma, S.C., Major Hazard & Chemical Safety Division, Central Labour Institute, Mumbai)**

The document is a calculation of dispersion of carbon monoxide in case of rupture of bursting disc of 50 mm x 200 mm. The calculations for representative wind speeds i.e. 1.5, 3 & 5 meter/Second have been done to find out the maximum distances in the wind direction up to which the two levels of concern (IDLH & STEL) may reach. The maximum distances were found for the weather stability class F and the wind speed 1.5 meter /Sec. which are as follows: Distance of IDLH (1200 ppm) in wind direction: 84 Meters from the source; Distance of STEL (400 ppm) in wind direction: 161 Meters from the source. It has been suggested that the table of distances should be used keeping in view the conditions at the time of release. Emergency preparedness should be ensured for the maximum distances found in the calculations.

Study of Dispersion Modelling for Propane Storage Area of a Automobile Plant in Orissa **(Gautam, S.S., Sharma, S.C., Major Hazard & Chemical Safety Division, Central Labour Institute, Mumbai)**

The document contains the findings of estimation of damages likely on release on of Propane gas from a storage tank 50MT capacity. The calculations for a release through material discharge line of 3" diameter at the bottom of the tank, for wind speeds 1.5 M/S, 3 M/S & 5 M/S have been done to find out the maximum distances in the wind direction up to which the 60% of LEL (12000ppm), 10% of LEL (2000ppm) and TEEL (2100ppm) may reach. The maximum distances found for the weather stability class F and the wind speed 1.5 meter /Sec. are as follows: for 60% LEL (12000 ppm) 301 Meters from the source in wind direction; for 10% LEL (2000 ppm) 729 Meters from the source in wind direction; and for TEEL (2100 ppm) 711 Meters from the source in

wind direction.In case of ignition of flammable cloud a flash of fire will take place causing physical damage of buildings to different extent. The maximum distances found were 213 meters for serious injury and 346 meters for Shutters blasts. After the flash fire, local jet fire will be formed at the point of leakage. There is no effect of weather stability class in heat radiations. The heat radiation from jet fires have been calculated for different wind speeds and different levels of RH. It was observed that maximum distances of LOCs were for 10% RH and wind speed 5.0 M/Sec. i.e. 55 Meters for Potentially lethal within 60 sec, 77 Meters 2nd degree burns within 60 sec.,and 118 Meters for pain within 60sec. The heat radiations from BLEVE have been calculated for different levels of RH. It was observed that maximum distances of LOCs were for 10% RH which were: 437 Meters for potentially lethal within 60 sec., 617 Meters for 2nd degree burns within 60 sec and 964 Meters for pain within 60 sec. The suggestions have been given to ensure the preparedness for the worst conditions.

Investigative Study of a Multi-fatal Accident of a Shoe Manufacturing Industry in Haryana **(Gautam, S.S., Sharma, S.C., Major Hazard & Chemical Safety Division, Central Labour Institute, Mumbai)**

The document is a report of investigation of a multi-fatality accident in a footwear industry. Slippers of synthetic materials like rubber; PVC, polyurethane, etc. were being manufactured in the factory. The explosion took place in a hall where the slippers were being assembled by applying adhesive solutions in various parts, their pasting, drawing and finishing by edge grinding. At 5.00 p.m. on 1st May, 2009 a sudden explosion took place in the hall fracturing all the windows and damaging the building followed by subsequent fire. The event claimed lives of 14 workers with injuries to 25 others. Even though the management did not reveal the cause of accident, yet with the help of statements of the survived workers and circumstantial evidences available at the place of accident, it was concluded that a drum containing highly flammable liquid which had been brought from outside where the ambient temperature was about 45^{0}C had started leaking from brim of the drum due to striking of drum on to the wall. This gave away two phase flow of liquid and vapour with pressure which got ignited on falling on the ground. After few moments when the vapour had spread sufficiently, a confined vapour cloud explosion has taken place.

Safety Audit at Thermal Power Plant in Uttar Pradesh **(Mathur, S.B., Brij Mohan and Chakraborty A.K., Regional Labour Institute, Kanpur)**

The Study found anomalies in status and conditions of service of Safety officers, safety policy not adopted, less participation of workers in safety committee, weaknesses in Permit to Work System, unqualified supervisors of subcontractor for erection jobs, untested and corroded slings etc. The report gives 107 recommendations for correcting the defects found. Some of them were improving the management system, improving the supervision, use of tested slings and other loose gears and ensuring qualified and well trained supervisors.

Safety Audit at a Paper Manufacturing Factory in Uttarakhand **(Brij Mohan and Dwivedi, S.K., Regional Labour Institute, Kanpur)**

The Study found deviations in the safety Management System, weaknesses in chemical Storage and process safety aspects. The report recommended strict compliance to permit to work system, review of on-site emergency plan, thorough examination of slings, structural stability test of washing section of pulp mill and CO sensors with alarm in the Producer gas plant and proper maintenance of the poke holes on the reaction chambers in producer gas plant.

Assessment of Capabilities & Management of Occupational Safety and Health in the State of Chhattisgarh **(Shrivastatva, S.K., Rustagi, N.K., and Bhattacharya, Champak, Regional Labour Institute, Kanpur)**

The Study found that only few factories are sending annual returns. It is recommended that efforts should be made to ensure compliance with the requirement of submission of annual returns in prescribed format by registered factories. Basic metal & alloys industries contribute to maximum number of fatal injuries; therefore during the inspection of basic metal & alloys factories, safety aspect should be given consideration by the factory inspectors. The need for training of workers in safety and health aspect was emphasised. It was recommended that the occupiers / the managers of the factories should be told about their statutory duties for implementation of suitable work procedures, permit to work system & safe system of work. The analysis of accidents with respect to the location of injuries reveals that hands and foot are the body parts which are frequently injured in accidents. This indicates that proper protection of these body parts is not ensured at workplace. It was recommended that all occupiers must be advised to send the reports duly filled and mention the NIC code of the industry. It was also suggested that form 22 may be changed accordingly to ensure that all required information is filled therein.

QUOTABLE QUOTES

- Broken tools can be replaced. You can't be.
- Don't let the light go out, wear eye protection.
- Informed is better than deformed.
- Living with your mistakes is harder than you think.... wear your safety gear.
- My job provides my paycheck, but safety takes me home.

TRAINING CALENDER FOR THE YEAR 2009: DGFASLI

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S.No.	Title of the Programme	Period	Coordinating Division
1.	Advanced Diploma in Industrial Safety (ADIS) 2009-10	July 1–October 30	SAFETY
2.	Training Programme on Ind. Safety (NSC members only) - MC	July 15 – 17	SAFETY
3.	Team - building for Health, Safety & Welfare at Work	July 21-23	ST/PROD
4.	Safety, Health & Environment Management in Process Industries	July 22-24	MH&CS
5.	One Month Specialized Certificate Course in Safety and Health for Supervisory Personnel Engaged in Hazardous Process Industries	August 24-September 23	ST/PROD
6.	Making Safety Committee more Effective	August 26-28	IND. PSY
7.	Workshop on Safety Audit	August 26-28	SAFETY
8.	Advanced Training Programme on Occupational Health & Environmental Medicine	September 07-11	IND. MED.
9.	Selection & Quality Assurance for Effective Use of PPE	September 15-17	IH/NRTL
10.	Basic Course for Inspectors of Factories	September 07-25	SAFETY
11.	Training Workshop on Hazard & Operability (HAZOP) Studies	September 23-25	MH&CS
12.	Workshop on Environmental Audit	September 23-25	EED
13.	Training Programme on Industrial Safety (for NSC Members Only) - MC	October 07-09	SAFETY
14.	Monitoring of Work Environment in Industries	November 09-11	IH/NRTL
15.	Refresher Course for Senior Inspectors of Factories	November 16-27	SAFETY
16.	Productivity & Quality through Effective Employee Participation	November 17-19	ST/PROD
17.	Storage, Handling & Management of Hazardous Substances in Process Industries	November 18-20	MH&CS
18.	Handling Problem Behaviour of Employees	November 18-20	IND. PSY.
19.	Impact of Environmental Pollutants & their Control at Work Place	November 24-26	EED
20.	Industrial Hygiene Techniques	December 07-09	IH
21.	Training Workshop on Occupational Health Practice for Nurses, Medical/Health Assistants	December 07-11	IND. MED.
22.	Testing & Examination of Lifting Tackles & Pressure Vessels	December 09-11	SAFETY
23.	OSH-MS	December 15-17	ST/PROD
24.	Effective Leadership for Safety, Health & Productivity	December 16-18	IND. PSY.
25.	Training Programme on Industrial Safety (for NSC Members only) - MC	December 16-18	SAFETY

Abbreviations: I.H. – Industrial Hygiene, PHY/ERG – Physiology/Ergonomics, IND.PSY. – Industrial Psychology, IND. MED. – Industrial Medicine, EED – Environmental Engineering Division, MH&CS – Major Hazards & Chemical Safety, NRTL – Non-respiratory Testing Laboratory, ST/PROD – Staff Training/Productivity.

- The concerned division will mail the training programme brochures sufficiently in advance, confirming the dates of commencement of course, its venue etc. to the organizations as per the mailing list available with the division.
- The Director In-charge of the respective co-ordinating division should be contacted for further details such as training programme dates, venue, programme contents, level of participants, details of course fee and its payment etc.
- Admission to the course will be restricted to 20 participants on First-Come-First-Served basis. Participants are not allowed to attend the training course without written confirmation by the concerned division.
- Limited Hostel Accomodation on sharing and chargeable basis will be available on 'First-Come-First-Served' basis.

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S.No.	Title of the Programme	Period	Coordinating Division
1.	Training Programme on Process Safety for Safety Committee Members	July 7-10	IH
2.	Post Diploma Course on Industrial Safety 2009-10	July 2009 to March 2010	SAFETY
3.	Training Programme on Effective Supervision for Safety, Health & Environment at Workplace	August 5-7	SAFETY
4.	Training Programme on Testing & Examination of Lifting Machines &	August 17-21	SAFETY

	Pressure Vessels		
5.	Training Programme on Safety & The Law	September 2-4	SAFETY
6.	Package Training Programme for Plant Faculties on 'Industrial Safety and Health'	September 14-18	SAFETY
7.	Workshop On Monitoring of Work Environment and its Execution	October 6-8	IH
8.	Seminar On 'Emerging Issues on Process Safety Management'	October 30	IH
9.	One Month Specialized Certificate Course in Safety and Health for Supervisory Personnel Engaged in Hazardous Process Industries	November 3 to December 1	SAFETY
10.	Workshop on Safety Audit	December 8-10	SAFETY
11.	Training Programme on Process Safety for Inspector of Factories	December 14-18	IH

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S.No.	Title of the Programme	Period	Coordinating Division
1.	Workshop on Monitoring Work Environment	July 7-10	IH
2.	Diploma Course in Industrial Safety (DCIS)	July 2009-June 2010	SAFETY
3.	Training Programme on Safety Audit	August 19-21	SAFETY
4.	Training programme on Fire & Explosion in Major Accident Hazard Industries / Chemical Industries	September 23-25	SAFETY
5.	Training on Lifting Tackles	October 29-30	SAFETY
6.	Training Programme on Management of Hazardous Substances	December 15-18	IH

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S.No.	Title of the Programme	Period	Coordinating Division
1.	Delivering the Package Programme on 'Industrial Safety & Health' (A Development Programme for Plant Faculties on Industrial Safety & Health)	July 20-24	SAFETY
2.	Environmental Hazards & Their Control in Industries	August 17-21	IH
3.	Training Programme on Chemical Safety	September 7-11	SAFETY
4.	Safety in Construction Industries	October 26-30	SAFETY
5.	Workers' Development Programme	November 10-11	IND. MED.
6.	One Month Specialized Certificate Course in Safety and Health for Supervisory Personnel Engaged in Hazardous Process Industries	November 17-16	SAFETY
7.	Occupational Health and Environmental Medicine for Medical & Non-Medical Executives of the Industries	December 7-11	IND. MED.

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S.No.	Title of the Programme	Period
1.	Human Factors in Occupational Safety, Health and Environment and their Management	April 22-24
2.	Management of Safety, Health and Environment at Workplace	May 12-13
3.	Physical Hazards and their Management at Workplace	June 15-16
4.	Management of Safety, Health and Environment at Workplace	July 20-21
5.	Environmental Hazards and their Management at Workplace	August 24-25
6.	Human Factors in Occupational Safety, Health and Environment and their Management	September 14-15
7.	Chemical Hazards and their Management at Workplace	November 16-17
8.	Behavioral and Ergonomics Factors and their Management at Workplace	December 08-09
9.	Management of Safety, Health and Environment at Workplace	January 20-21, 2010
Note: In addition to these training programmes, workshops/seminars will be organized depending upon the requirement and schedule. Two specialized training programmes for Small Scale Industry will also be organized.		

MARY PARKER FOLLETT
(1868-1933)


Mary Parker Follett
(1868-1933)

Born 1868

Died 1933

Citizen, *American.*

Mary Parker Follett was born in Massachusetts, America and spent much of her life there. She was an American social worker, management consultant and pioneer in the field of organizational theory and organizational behavior. She was one of the great women management guru in the early days of classical management theory and one of the first women ever invited to address the London School of Ergonomics.

She applied psychological insight and social science findings to the study of Industrial organization. Her work focused on human relations within industrial groups and pioneered the understanding of lateral processes within hierarchical organisations, the importance of informal processes within organisations and the idea of the *Authority of Expertise*. She viewed business as a pioneering field within which solution to human relation problems were being tested out.

Follett also devoted herself to social work and writing books. She was instrumental in the formation of social centres in America. She served as member of the Massachusetts' *Minimum Wage Board* and in 1917 she became vice-president of the National Community Centre Association. She also served as personal consultant to the president Theodre Roosevelt on managing not-for profit, non-governmental and voluntary organization. She carried out intensive research into government while was with the president and later published her first book *The Speaker of the House of Representative (1890)*. Later, over a period, she published many works and few of the famous books of her are:

- *The New State* published in 1918.
- *Creative Experience* published in 1924.
- *Dynamic Administration* published posthumously in 1941.

She advocated the idea of *Reciprocal Relationship* in understanding the dynamic aspect of the individual in relationship to others. Her ideas on negotiation, power and employee participation were highly influential in the development of the fields of organizational studies, alternative dispute relation and human relations movement.

Mary Parker Follett's writings were known to a limited circle until republished at the beginning of this decade. Follett is increasingly recognized today as the originator, at least in the twentieth century, of ideas that are today commonly accepted as cutting edge in organizational theory and public administration. These include the idea of seeking "win-win" solutions, community-based solutions, strength in human diversity, situational leadership, and a focus on process. However, just as her ideas were advanced for her own time, and advanced when people wrote about them decades after her death, they remain too often unrealized. We recognize them as an inspirational and guiding ideal for us today.

Reference:

1. Sandra Anderson and Carol Bake, *Business;The Ultimate Resource,* New York, Perseus Publishing House, 2002.
2. *Wikipedia,* The free encyclopedia.
3. Art Kleiner, *The Age of Heretics: Heroes, Outlaws and the Forerunners of Corprate Change,* New York, Doubleday, 1996.

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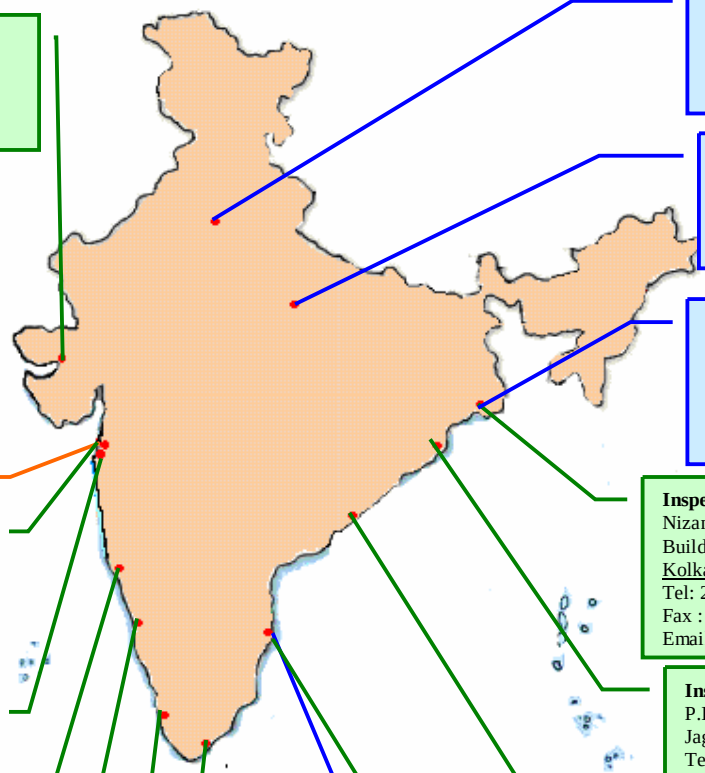
ESTABLISHMENTS OF DIRECTORATE GENERAL FACTORY ADVICE SERVICE & LABOUR INSTITUTES



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