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मेरी कलम से

इंडोशन्यूज की वर्षगांठ अंक को पेश करते हुए मुझे बेहद खुशी है। व्यावसायिक सुरक्षा और स्वास्थ्य की सेवा में इस महत्वपूर्ण न्यूजलेटर ने सोलह साल पूरे किए हैं। संपादकीय बोर्ड को, पत्रिका के पहले प्रकाशन के बाद से ही पाठकों की ओर से कई मूल्यवान सुझाव प्राप्त हुए, जिससे न्यूजलेटर को और अधिक मजबूत किया गया। आशा करता हूँ कि भविष्य में भी, पाठकों, वृत्तिक सहकर्मियों के सहयोग से यह प्रकाशन और अधिक मजबूत बनेगा।

इंडोशन्यूज के इस अंक में अन्य विशिष्टताओं के साथ-साथ दो लेख भी शामिल हैं। पहला अंक उन औद्योगिक जोखिमों से संबद्ध है जो हैंडलिंग, भंडारण अथवा संचालन की त्रुटियों और स्वीकृति प्राप्त सुरक्षा प्रणालियों के उल्लंघन से उत्पन्न होती हैं। अतः उद्योगों को ऐसे संभावनाओं के लिए हमेशा तैयार रहना चाहिए। वर्तमान परिदृश्य में जोखिम प्रबंधन का मुख्य कार्य केवल जोखिम नियंत्रण ही नहीं, बल्कि उद्योगों में उत्पन्न होने वाले सभी प्रकार के जोखिमों के विश्लेषण और नियंत्रण में सहायता प्रदान करना भी है। दूसरा लेख, औद्योगिक वृद्धि के लिए सुरक्षा प्रबंधन सिद्धांतों के व्यवहारिक प्रयोग के बारे में है।

आशा है कि इंडोशन्यूज के इस अंक में दी गई जानकारी से उद्योग जगत के लोग इसका लाभ लेंगे।

FROM THE DESK

It gives me great pleasure to present this anniversary issue of INDOSHNEWS. This quality newsletter has completed sixteen years in the service of OSH. Since its first Publication the editorial board has received valuable suggestions from the readers to strengthen the newsletter. I hope that with the support of the readers, professional colleagues, the publication will go from strength to strength.

This issue of INDOSHNEWS contains two articles with other features. The first article deals with the Industrial risks may arise while handling, storage or because of operational errors and violation of accepted safety procedures. The industry, therefore, has to be always prepared for such eventualities. In the present scenario the main function of the risk management is to control not only the pure risks but also extend services to the analysis and control of all types of risks arising out in the industry. The second article talks about application of safety management principles for industrial growth.

I hope Industry will harvest benefit from the information carried by this issue of INDOSHNEWS.

Dr. M.Rajaram
Editor In-chief

CHEMICAL PROCESS SAFETY THROUGH USE OF SOFTWARES

S.Bharathi

Abstract

Management of risk is very essential to avoid unwanted circumstances in a large array of areas like industrial fire/explosions, toxic release, irrecoverable mechanical and process failures, workplace injuries/ death and others. The policy-making process, in deciding what and how we might benefit from a risk management, has to essentially recognize the character, strength, and limitations of the tools being used /involved in arriving at a decision. This paper brings out the necessity of reasonably valid and acceptable risk evaluation tools by highlighting the availability of various software tools for the purpose. The past experience suggests that identifying sound, credible and effective reduction priorities and solutions through a variety of possible and practicable methods always leads to better safety results.

INTRODUCTION

Considering the depth of the technology, scale of chemical process operations, societal demand for effective demonstration of safe operation, timely non-availability of qualified manpower, upward trend of insurance cost and the increasing legislative requirements along with other relevant factors have made the risk managers to resort to various innovative methods to demonstrate their commitment for safe operation of complicated chemical process industries.

Risks voluntarily assumed are ranked differently from those imposed. Statement like risks are "too low to worry about or insignificant or trivial" is likely to cast doubts about the engineering confidence of the management. But risks which are familiar is increasingly accepted than others. The risks that are highly feared or catastrophic in nature are viewed as more dangerous. The danger perception of the same risk is varying at a given time by different stakeholders which is understandable.

The macro / corporate risk management is a complex framework which includes:

- Hazard reduction (Health-based, Technology-based , Risk-balancing ..)
- Control measures (regulations, permits, enforcement..)
- Economic incentives (leads to changes in industrial production decisions and consumer behaviors..)
- Voluntary reductions of risk-producing activities (promotion of pollution prevention, information and education programs..)

NECESSITY FOR IMPROVED METHODS

Chemical process industries need to practice risk management program in order to remain competitive and to meet legislative requirements. Even after best possible practices put in place many managements face significant challenges during implementation as risk management involves cross-functional and multi-disciplinary convergence. Further inadequate/inconsistent manufacturing process will always result in lesser quality products, increased recalls, loss of brand name / product reputation and increased liability costs. Management that use slower and conservative methods/tools for risk analyses get inundated with cumbersome documentation, random variations in the manufacturing process and thus making their efforts insignificant or less important while reviewing the decision making process. An effective and

quality risk management plan includes understanding product & process characteristics, perform failure data analysis, apply correct testing, measurement & improved inspection system to reduce deviation of critical process parameters.

SELECTION OF ACCEPTABLE RISK MANAGEMENT METHOD

The trend is that the managements are determined now than ever to demonstrate their commitment by more acceptable methods of risk management. One such activity is the increasing use of the softwares / software based database in various risk management activities by the managements. They are directly resulting into better and faster results in the sphere of hazard identification, hazard assessment ,hazard communication & consultation , establishing a system for safe & standard operation, reliable maintenance system for highly critical process equipment etc. These benefits are further supplemented by the root causes identified by the managements through scientific accident / incident investigation, carried out in its proper perspective.

Performing a reliable quantitative risk analysis requires data which is of high quality, statistically valid and accurate. This is the desired objective for all of us. The accurate data can be generated from gathering and pooling together the data available from large number of companies, processes, and users of equipment. Quality assurance of the data used in the softwares could be achieved by providing automatic uploading , compare against standard benchmarking of the failure rates of many industries/ manufacturer since the data analysis is centralized and operated on global basis.

BENEFITS THROUGH USE OF SOFTWARES

The softwares / software based database normally results into or its benefits includes:

- Optimisation of plant layout at the design stage
- Selection of minimum risk for retaining
- Achieving reliable emergency plans with adequate control and mitigation measures
- Use of Inherently safer design / substances
- Increased Environmental protection
- Better demonstration of legislative compliance

The following are the key areas which could be effectively analysed by using appropriate software. The level of non acceptance or the outrage by stakeholders will be

reduced much when the management resorts to best possible evaluation methods.

- Determine what hazards will be accepted (identification)
- Control options available (assessment)
- Elimination or reduction or transfer or retaining unacceptable risks (decision on the results of the evaluation done)

and amalgamation of maximum hazards and data could be is the use of software and software based data management. Therefore it is more important for the safety professional, Design engineers, Process Chemists and plant engineers to have an idea of few software available. The following are some of the brief details of the software/software based database available for them in discharging their process safety responsibility in a better manner. The readers are strongly advised to verify the stated usefulness from authenticated sources.

One of the risk management tools through which faster

BRIEF INFORMATION ON SOFTWARES

Name of the software	Brief Technical details	Useful for whom	Web link/reference
SUPERCHEM S-PROGRAM	For pressure relief system design. Simulation for more than one phase flow, modeling of multiphase is possible. Contains a large database of more than 1,200 industrial chemicals which reduces search time.	Design engineers plant engineers & others who are responsible for safe operation of pressure relief systems	http://www.aiche.org/ccps/ActiveProjects/PERD/index.aspx
PERD	This is developed by CCPS to optimize mechanical integrity. Participating companies are provided with dedicated and efficient software tools for data submission for operation of equipments reliability database to support three important functions i.e availability, reliability, and design Improvements. Maintenance strategies and determination of life Cycle Cost possible.	plant engineers, safety professionals, reliability engineers, maintenance professionals	http://www.aiche.org/CCPS/Publications/Software/index.aspx
Chemdata	Database of over 36,000 substances and more than 116,000 different chemical names, including pure and trade-name chemicals.	Fire and Emergency services to provide advice in the event of chemical spillages, fires and contamination incidents.	http://the-ncec.com/chemdata/ and http://www.environmental-expert.com
PHA-Pro	The technical information on HAZOP, What If / Checklist, PrHA, LOPA, SIL, HACCP are also available with this to help organization to manage risk policies and programs	Process industries such as oil and gas, chemicals, and Pharma.	http://www.dyadem.com/resources
FMEA-Pro	FMEA-Pro supports Failure Mode and Effects Criticality Analysis (FMECA), Design Verification Planning and Reporting (DVP&R), Process Flow Charts, FMEA-based Reliability Centered Maintenance	Design/ process engineers	http://www.dyadem.com/resources/brochures/fmea-pro/
FMEA-Med	Top-down approach for analyzing pre-event & post-event failures to determine how it can occur and to find the root cause of the failure.	Medical device and pharma manufacturers	http://www.dyadem.com/resources/
FTA-Pro	Reduces design defects, product recalls and production downtime.	Design /safety / Production engineers/ marketing/ product safety	http://www.dyadem.com/resources/
SVA-Pro	Helps chemical facilities in improving security systems through Vulnerability Assessments studies, identifying vulnerability risks, Optimizing work time, minimizing work stoppages, reduces undesirable litigation.	Decisions making authorities on security measures to protect employees, community, & environment	http://www.softscout.com/software

KY PIPES	Study for Fire Water network requirement in Industry.	Safety and Fire Engineers	http://www.kypipe.com/
SAFETI	Estimates toxic chemicals travel distance and impact on people.	Risk managers, safety & Health professionals and various authorities.	http://www.dnv.com/services/software
EFFECTS	Calculation of physical effects of an accident by modeling / quantitative assessment of toxic / flammable chemicals.	Risk managers, safety & Health professionals, Plant engineers	http://www.tno.nl/
WHAZAN	Consequence model for over flow of chemicals and its behaviour immediately after release including cloud dispersion.	Risk managers, safety and health professionals, local authorities	http://www.epa.gov/
CHAZOP	Identifies the potential strength and weakness in instrument control, computer system, functional safety of electrical / electronic related items to ensure sufficient redundancy.	Risk managers, safety and health professionals, Insurance authorities.	http://www.dyadem.com/services/chazop/
ALOHA	Estimates threat zones for hazardous chemical releases like toxic gas clouds, fires & explosion.	Planning Engineers, Insurance Professionals.	http://www.epa.gov/oem/content/cameo/aloha.htm
SIL	Provides system safeguarding for emergency shut downs and deals with Instrument protective functions	Process / instrumentation engineers.	http://www.prlog.org/
LAYER OF PROTECTION ANALYSIS	Used for complex scenario when consequence is too severe for a single event. Do fire risk assessment and reviews existing prevention and protection system	Fire mangers, Insurance managers, safety professionals.	http://www.primatech.com/software/LOPAWorks2
PHAST	Used for societal risk assessment involving flammable and toxic gases by predictive modeling and forecasting	Financial risk assessors, valuers, cost estimation, project managers, investment decision making authorities	http://www.dnv.com/services/software/publications/2008/no_2/phastsoftwaresafetyprofessionals.asp
HAZOP PRO	Provides data base for Fire, Explosion and Toxic properties of important chemicals	Layout engineers, design / process/safety engineers	http://software.informer.com/discovered/Hazop_Pro_Bell
PRIMAVERA PERTMASTER	Estimates cost & scheduled risk management with techniques for contingency risk response plans.	Sectors like Oil /Gas exploration/ aerospace/ IT/ manufacturing	www.primavera.com
SMART PLANT LAYOUT	Helps for meeting plant layout, design requirements, optimal workflow, preliminary design etc. by integrating several elements.	plant engineers and contractors, safety professionals, Local authorities.	http://www.intergraph.com/learnmore/ppm/engineering-procurement-and-construction/plant-layout.aspx
SHIFT VISION	Maintain communication process for shift changeovers & creates accurate handover documents for smooth transition. Generates daily, weekly, monthly or yearly reports & the same useful for employees joining after a break to improve their effectiveness	Shift engineers, safety professionals, Utility engineers, Planning engineers	info@evision-software.nl
PTW AND PERMIT VISION	Replaces hard-copy of Permit-To-Work forms and reduces administrative burden .Uses IT*to aid users. Issue /monitor from many locations. Controlling authority gets real-time update on all authenticated permits. Automatically integrates safety precautions to avoid human error.	Maintenance/process /safety engineers	info@evision-software.nl

CONCLUSION

In today's competitive production environment, corporate decision makers are facing challenges in the management of hazardous facilities to ensure safe production & other activities whilst complying with legislative requirements. As a safety professional, we must continue to advocate and demonstrate that "Good safety means Good business" for which one must use the best available methods and tools to achieve sustainable safety and health performance. In general the use of softwares when integrated with other normally established operational requirements gives reasonable estimates of the risk involved in chemical process by highlighting the manner of probability of occurrence of hazardous events and predicted consequences of such events. However, identification and application of specific software depends upon the hazard potential, engineering confidence of management and plant employees, regulatory requirements and societal concerns. But use of softwares itself will not reduce the risks and improve the risk management activity but the results obtained from them will have to be cleverly analyzed and incorporated in the decision making process.

REFERENCE

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2. Web Resources.

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CIS: INTERNATIONAL OCCUPATIONAL SAFETY AND HEALTH INFORMATION CENTRE

CIS (from the French name, Centre International d'information de securite et d'hygiene du travail) i.e. International Occupational Safety and Health Information Centre, is a part of the International Labour Office, Geneva, Switzerland.

The mission of CIS is to collect world literature that can contribute to the prevention of occupational hazards and to disseminate this information at an international level. CIS imparts to its users the most comprehensive and up-to-date information in the field of Occupational Safety and Health. The work of CIS is supported by a worldwide Safety and Health information exchange network, which includes over 91 Centres.

Central Labour Institute, Mumbai has been designated as the CIS National Centres of India. CIS can offer you rapid access to comprehensive information on occupational safety and health through its abstracts on latest OSH publications, the CIS Thesaurus and ILO Bulletin 'Safety and health at Work'.

DGFASLI AT A GLANCE

The Directorate General Factory Advice Service & Labour Institutes (DGFASLI) is an attached office of the Ministry of Labour & Employment Government of India. DGFASLI organization was set up in 1945 under the Ministry of Labour, Government of India to serve as a technical arm to assist the Ministry in formulating national policies on occupational safety and health in factories and docks and to advise State Governments and factories on matters concerning safety, health, efficiency and well-being of the persons at workplace. It also enforces safety and health statutes in major ports of the country.

The Directorate General Factory Advice Service & Labour Institutes (DGFASLI) comprises:

- Headquarters situated in Mumbai
- Central Labour Institute in Mumbai
- Regional Labour Institutes in Kolkata, Chennai, Faridabad and Kanpur

Vision of DGFASLI: DGFASLI envisions emerging as an organization of excellence in creating knowledge, formulating policies, standards and practices to ensure safe and healthy workplaces for all in factories and ports.

Mission of DGFASLI: The mission of DGFASLI is to render its expertise in occupational safety and health for evolving safe and healthy workplaces in factories and ports through a process of partnership, guidance, regulatory activities in specific sector and information sharing.

DGFASLI organization comprises of its Headquarters situated in Mumbai, Central Labour Institute (CLI) in Mumbai, four Regional Labour Institutes (RLI) in Chennai, Faridabad, Kanpur & Kolkata and eleven Inspectorate of Dock Safety (IDS) offices located at different ports situated all over the country.

DGFASLI organization consists of a multidisciplinary team of around 129 officers (engineers, physicians, industrial hygienists, physiologists, ergonomists, industrial psychologists, commercial artists etc. and 81 technical staff members.

Various specialty divisions/cells under DGFASLI office and Central Labour Institutes in Mumbai include

- a) Factory Advice Service
- b) Dock Safety
- c) Construction Safety
- d) Awards
- e) Statistics
- f) Industrial Safety
- g) Industrial Hygiene
- h) Industrial Medicine
- i) Industrial Physiology & Ergonomics
- j) Staff Training, Productivity & Small Scale
- k) Industrial Psychology
- l) Major Hazards Chemical Safety
- m) Management Information Services
- n) Environmental Engineering and
- o) Communication Division.

Armed with the technology, good will of the industrial society and the strength of the dedicated staff, the organization is well prepared to meet the challenges of tomorrow.

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SAFETY MANAGEMENT SYSTEM FOR SUSTAINABLE INDUSTRIAL DEVELOPMENT

H.V.Chattopadhyay

Abstracts

New technologies, Changed functional behaviour of the market, frequent changes of National & International rules and regulations has increased competitiveness amongst industries in many folds. The Sustainable industrial development could be defined as a process of adopting business strategies and activities to meet the needs of the enterprise and its stakeholders while protecting, sustaining and enhancing the human and natural resources that will be needed in the future. This is possible only when the enterprise adopt the long term planning to minimize the all kind of predictive losses. This paper high lights the application of safety management principles in the industrial situations as a loss control management tools.

INTRODUCTION

The most unpleasant truth in the industrial scenario is that in spite of several control measures in the design, accidental losses cannot be avoided in the worksite. There is always a chance of such unprecedented losses. These losses are unprecedented because they happen beyond the designed parameters. These losses can be divided into different segments. One of such segments is losses due to unsafe condition and unsafe Act which are generated during the process and the product lifecycle at users end. Now, to limit these unplanned events proper events management is essential in both the sector, process and product lifecycle. Several equations are formed in the market to support the designers so that the losses / failure of the process and product can be controlled at the design stage. But still there is no foolproof system which is balanced in all respect to eliminate such losses at lesser cost in the users end. The main imbalance in this equation is that the industry is less aware of any method by which they can detect the happening of such losses in advance. The detection of such happening requires enough data on happening scenarios. Moreover, the causes of each individual happening are independent elements and are difficult to be formed in a mathematical expression so that probability of happening can be forecasted.

Of course within the limited scope of functioning there are some scientific concepts which contribute a lot in controlling these undesirable events. These event managements are known as Safety Management System and any technique which contribute to control those undesirable events are termed as SAFETY. Hence all accidental loss control devices are SAFETY.

In the beginning of Nineteenth Century, the Industrial revolution had given the trade a new concept 'productivity', a yardstick of industrial development. According to this concept, the increased output against a fixed input or the fixed output against a decreased input is the symptom of industrial development. As a result, lot of Management theories and technical developments are made for best use of industrial resources so that the loss can be minimized and output/input ratio can be increased. But the unfortunate part is that the increase or decrease of productivity as a whole cannot identify the source which has actually contributed for its performance change. This disadvantage had restricted the industrial development within the periphery of the development of process and products only i.e. to increase the productivity the entire effort was given on the modification of the

process and product design only. As a result, in the name of modernization, lot of damage is made on the concept of working environment.

In fact the basic objective of Industrial Revolution i.e. supply of advance facilities in bulk to the trade so that it can reach to the common people and common people can enjoy its fruits at affordable cost, was defeated. To reach the affordable cost industry started making maximum cost curtailment on the designed maintenance system especially in the third world country like us. USE turned into MISUSE and then ABUSE on the control system of design parameters which resulted in more damage on working environment. Industrial Revolution had redefined the term 'SKILL' in industry. Adjustment with the machine pace is the SKILL in modern industry. So, unskilled labours are fully exposed to the Industrial Hazards without any choice which in turn damage the working environment, hence the productivity as a whole. So, modern industrial concept has started searching for a system where the development does not restrict itself within the boundary of modification only but the change of total working environment of the present and near future. Hence, a concept of total development of the working scenario is getting popularity day by day. The sustainable Development is no doubt the answer of that journey of the industry.

SUSTAINABLE INDUSTRIAL DEVELOPMENT

Sustainable industrial development could be defined as a process of adopting business strategies and activities to meet the needs of the enterprise and its stakeholders while protecting, sustaining and enhancing the human and natural resources that will be needed in the future. The success of a Sustainable Industrial Development of an industry depends on effective participation of all concern: - Employer, Employee, and the Statutory body/Authority. The role of industry in the process of sustainable development is obvious. It relates to changes in production processes and products aimed at improvement of the environmental, economic and social performance of enterprises. Generally, to ensure sustainable industrial development, systematic application of the following measures by industry is needed.

1. Cleaner production and waste minimization.
2. Environmental Management systems (or preferably, integrated environmental, quality, health and safety management systems).
3. Product oriented measures of sustainable industrial development

4. Environmental performance evaluation and sustainability reporting.

The best result could be achieved only by an integral application of these measures. The key issue in this regard is tackling environmental problems in a systematic way in all stages of a product life-cycle and applying both managerial and technical measures.

SAFETY MANAGEMENT SYSTEM

A Safety Management System (SMS) is a systematic approach for managing safety, including the necessary organizational structures, accountabilities, policies and procedures. An SMS can be likened to a toolbox. It is a toolbox that contains the tools that an organization needs in order to be able to control the safety risks of the consequences of the hazards it must face during the process/services for which the organization is in business. In many cases the organization itself generates the hazards during process. It is important to acknowledge that an SMS itself is neither a tool nor a process. An SMS is the toolbox, where the actual tools employed to conduct the two basic safety management processes (hazard identification and safety risk management) are contained and protected. What an SMS does for an organization is to provide a toolbox that is appropriate, in size and complexity, to the size and complexity of the organization.

THE WORKING TOOLS OF SAFETY MANAGEMENT SYSTEM

Line Management Responsibility for Averting Accidental Loss

Line management is directly responsible for the protection of the public, the workers, and the environment. It must start from the top management. This line management should be reciprocative in nature. The directives/commitments issued by the occupier should be carried out by the implementing personnel with proper spirit and objective.

Clearly Defined Roles and Responsibilities in Management

Clear and unambiguous lines of authority and responsibility for ensuring safety shall be established and maintained at all organizational levels within the Department and its contractors. The decision making management staff must be well aware of his responsibilities and authorities.

Competence Commensurate with Responsibilities

Personnel shall possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities. A system of continuous training and retraining should be established.

Balanced Priorities

Resources shall be effectively allocated to address safety, programmatic, and operational considerations. Protecting the public, the workers, and the environment shall be a priority whenever activities are planned and performed.

Identification of Safety Standards and Requirements

Before work is performed, the associated hazards shall be evaluated and an agreed-upon set of safety standard and requirements shall be established which, if properly implemented, will provide adequate assurance that the public, the workers, and the environment are protected from adverse consequences.

Hazard Controls Tailored to Work Being Performed

Administrative and engineering controls to prevent or mitigate hazards shall be tailored to the work being performed and associated hazards. A document in this regard should be maintained. An organized record keeping system shall be maintained.

Operations Authorization

The conditions and requirements to be satisfied for operations to be initiated and conducted shall be clearly established and agreed upon.

THE CONTRIBUTION OF EFFECTIVE SAFETY MANAGEMENT SYSTEM ON FACTORS OF SUSTAINABLE INDUSTRIAL DEVELOPMENT

Cleaner Production

Cleaner production is a focused approach designed to maximize the efficient use of raw materials, energy and water, and minimize the output of waste and harmful substances. An effective Safety Management System equipped with a guiding principle of balanced priorities and responsibilities along with competence. It promotes the optimal storage and use of raw materials and energy because it believes that **WHAT WE HAVE, THAT CAN ONLY LEAK**. So it always plead for the storage of material as minimum as reasonably practicable. The optimal use of raw materials reduces the risk of hazard and waste management in turn contributes to economical growth of the company. Hence an effective Safety Management System is a step of Sustainable Industrial development.

ENVIRONMENTAL MANAGEMENT SYSTEMS

Environmental management system is the overall strategy followed by management in environmental matters. In practice, it means to control or systematically minimize the environmental impact of company's processes, products and services and to find business opportunities in a correct environmental behavior. The definition of Environment includes water, air and land and the inter-relationship which exists among and between water, air and land, and human being and other living creatures, plants, micro-organism and property. Any damage on the environment ultimately returns to the industry itself. A strong line management and assigned responsibility can only protect the environment.

An effective Safety Management System has a strong pillar of Line Management Responsibility. The responsibilities are also documented with pre-identified role of each management functionaries. In earlier days the management responsibilities are considered to be limited to achieve the production target only. Even the maintenance works are considered as the unproductive. An efficient Safety Management System identifies hazards in a process; maintain the designed control

measures; assess the consequences at uncontrolled scenarios and the best possible mitigation system at uncontrolled scenarios. There can be a complete tailored made package suitable to every kind of industry to prevent accidental losses.

PRODUCT-ORIENTED MEASURES OF SUSTAINABLE INDUSTRIAL DEVELOPMENT

The main product-oriented measures include eco-design and life cycle management. These measures are aimed at improving the product environmental characteristics, taking into account its entire life-cycle from raw material extraction to production, use and ultimate disposal as well as transportation in different phases of its life cycle. Product Safety Management is part of Safety Management System. Every Product is designed with certain working limitations. The Safe Operating Procedure and Safe Maintenance Procedure are two important management tools of Safety Management System to ensure the Safety of each Product at user end. Product standardization is one of the basic guiding tools for effective Safety Management System.

ENVIRONMENTAL PERFORMANCE EVALUATION AND SUSTAINABILITY REPORTING

Many companies with a good environmental performance also want to show their stakeholders that they are working on environmental issues. Often this is done in a public report where the company presents its environmental impacts and the way it deals with environmental matters and continuous improvements. This type of environmental reports should be distinguished from the mandatory environmental reports required by authorities in many countries. There are several Performance evaluation techniques and reporting system used in Safety Management System. In fact different Inspection Techniques, Safety Auditing Techniques, Safety Reports etc. help the industries to assess their environmental impact. These assessment techniques guide the industries future course of action of the company so that the most vulnerable regions are identified and the proper planning of mitigation can be made.

CONCLUSION

Lastly, an effective Safety Management System is explicit because all safety management activities are documented, visible and therefore defensible. Safety management activities and the ensuing safety management know-how of the organization are formally recorded in official documentation that is available for anyone to access. Thus, safety management activities are transparent.

The sustainable industrial development is a concept and does not follow any simple and universal definition. It changes over time in response to increased information and society's evolving priorities. Though it is true that there is a growing response among business houses towards this concept yet it is the common opinion of most of the business executives that the principal objective of business is making money. There is always a difference of opinion on choice between financial survival and the investment on Sustainable Industrial Development. The

continuous regulatory pressure from the authority compels the organization to pay for the restoration of damaged environment or necessary control measures to protect the environment. In the mist of this complex business scenario the investment on effective Safety Management System can be an initial footstep towards Sustainable Industrial Development

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Kolkata

FILM ARCHIVE ON OCCUPATIONAL SAFETY, HEALTH & ENVIRONMENT AT CENTRAL LABOUR INSTITUTE, MUMBAI

The Government of India declared the National Policy on Safety, Health and Environment at Workplace on 28th February 2009. One of the goals of the National policy is to build and sustain preventive safety and health culture in the country in order to eliminate the hazards at workplace and to enhance the well being of employees in all the sectors of economic activities in our country. To attain this goal, one of the steps taken by Directorate General Factory Advice Service & Labour Institutes (DGFASLI) is to develop a **Film Archive on Occupational Safety, Health and Environment at Central Labour Institute in Mumbai.**

All the Film Producers, Organisations, Industries, Industrial Association, Trade unions, Professional bodies, Government and Non-Government organisations, Educational Institutes etc. are invited to enlist their films on Occupational Safety, Health & Environment (OSHE) in CD, DVD format etc. with the Film Archive for preparing a directory of OSHE films.

Interested Agencies/Individuals may please fill-up the proforma and send to:

The Director General,
DGFASLI
Central Labour Institute,
N.S.Mankiker Marg, Sion, Mumbai 400022
or

E-mail at editorindosh10@gmail.com.

The proforma may be downloaded from DGFASLI website at www.dgfasli.nic.in.

QUOTABLE QUOTES

"Protect your hands...Use your head."

"Safe Operators are Smooth Operators"

"Safe today - Alive tomorrow"