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- ARTICLE
- INSTITUTE NEWS
- DGFASLI MEGA EVENTS
- ABSTRACTS
- MATERIAL SAFETY DATA SHEET
- TRAINING CALENDER



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FROM THE DESK

I have the pleasure to present you the third issue of INDOSHNEWS which contains two excellent articles beside its regular features. The first article deals with the Hazard Control in Plant Maintenance Work. The article briefly deals with the technical, administrative and managerial actions required during the entire life span of equipment for management of effective maintenance and also about adverse health effects to the workers during maintenance. The article emphasizes that maintenance safety management should be taken up as an integral part of manufacturing activity instead of treating it as an accessory service. The article concludes with the remark that hazard control in plant maintenance work will result in increasing disciplined maintenance thereby adding profitability to the corporate houses apart from increased compliance to many legal requirements.

The other article talks about the Safety measures adopted for Cargo Handling in the Southern region ports. The article emphasizes the importance of safety measures that are required to be taken in each port.

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G.M.E.K.Raj
Editor In-chief

HAZARD CONTROL IN PLANT MAINTENANCE WORK

S. Bharathi

ABSTRACT

Maintenance process is normally conceived from the planning and design stage. The importance of hazard identification and risk assessment during maintenance work, especially when the plant is under normal shut down is generally a neglected area. Managements generally ignore allotment of sufficient time and resources, training and competence building of maintenance staff and do not attach importance to maintenance safety policy. The primary requirement for maintenance safety includes better and efficient design and easy to maintain equipment with improved training and sufficient knowledge on its design aspect. A maintenance safety chart is prepared in association with the maintenance workers to identify high risk tasks and to facilitate necessary skill through training for hazard identification and risk control. This is very essential since design engineers, equipment manufacturers, risk assessment specialists, supervisors and maintenance workers have different perceptions on risk level to be encountered while carrying out a maintenance job. This assumes more significance when process parameter exceeds limit much often. The need of the hour is that the maintenance safety management should be taken up as an integral part of manufacturing activity by all stakeholders instead of creating it as an accessory service which will surely result in increased maintenance discipline as well as create profitability to the corporate houses apart from complying with many legal requirements.

Though the complexity of maintenance task and hazards appears to be challenging, practicing maintenance safety management is a better solution to reduce maintenance related injuries/equipment damages.

INTRODUCTION

Maintenance management includes technical, administrative and managerial actions carried out during the life cycle of an equipment. This includes inspection, testing, measurement, replacement, adjustment, repair, fault detection and servicing. Maintenance is of two types. The first one is called the preventive maintenance (proactive), normally planned as per manufacturers' guideline. The second one is called corrective (reactive) maintenance which is unscheduled and unplanned, usually associated with greater risk than the former one. Hence it is necessary to have measured control in order to identify and eliminate hazards. Some of the jobs are of modification type than maintenance, but workers generally treat them as maintenance jobs. The workers are likely to develop musculo-skeletal disorders during maintenance. Further, exposure to chemical and biological hazards, exposure to harmful dust, etc. are other areas of concern. Maintenance activities not only affect the workers involved but also of other workers and members of public if safe maintenance procedure is not followed. Therefore the role of Hazard Management in maintenance work assumes importance.

MAINTENANCE PLANS

The process of maintenance is normally conceived from the planning and design stage. Managements generally ignore allotment of sufficient time and resources, training and competence building of maintenance staff and do not attach importance to maintenance safety policy. Many times maintenance workers work with machinery and equipments which do not have prescribed safeguards in place. The maintenance managers are not able to ensure workers have necessary skill for a particular job and they also fail to inform the workers about the hazards and safe work procedures. The maintenance plan must focus on reducing risk through a well documented procedure. The

issue of cultural and linguistic differences of migrant workers is also required to be taken into account. Wrong identification of equipment and improper isolation works are common. Further, preparatory measures like venting, draining, flushing, purging, etc. are taken up without adequately doing risk assessment resulting in many accidents.

HAZARD CONTROL IN MAINTENANCE

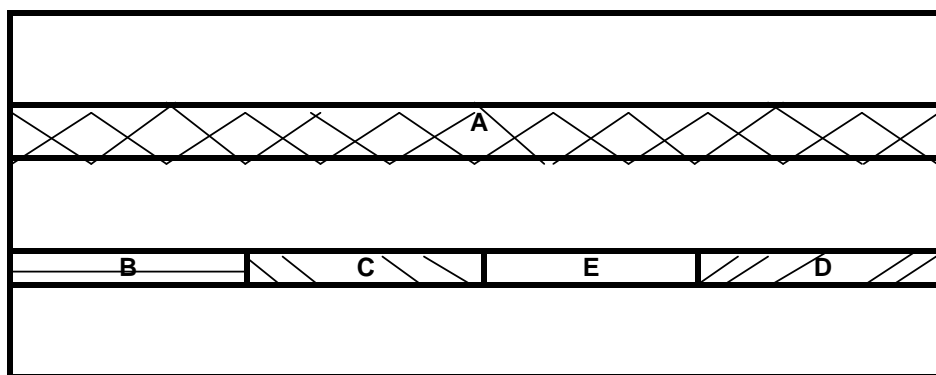
All hazard identification and control procedures shall be suitable, sufficient and of necessary depth to suit the technical requirement. The assessment results must be able to identify all controls & monitoring system and to put control system to respond correctly. Normal hazard identification during maintenance activity like emptying, purging, cleaning, breaking of pipelines, tank repairs, demolition, hot works, hot tapping, equipment removal, etc. must include identification and assessment of inherent and associated hazards to maintenance and other workers. Whenever hazard cannot be reasonably controlled to a safe level it shall be transferred to workers who are especially competent to deal with it. In any case overall hazard assessment surveys in a plant are necessary. Both the objectives of hazard assessment that is (1) to quantify the risk and realization of it and (2) to reduce the risk itself are required to be looked into.

The importance of hazard identification and risk assessment during maintenance work, especially when the plant is under normal shut down is generally a neglected area. Shortage of manpower or deployment manpower on common basis, shortage of utilities like inert gas, inadequate number of specially training manpower, are few of the prominent factors which cause industrial accidents during maintenance work. Since the factory is not on production mode, the intention is to complete maintenance work before schedule or reduce overshoot of

schedule by engaging additional but less qualified manpower or retaining the existing manpower for more than normal time by the contracting / sub-contracting agencies. Among others, this leads to mis-identification of materials (failure to follow marking, segregation) and mistakes in identifying components/equipments (use of over pressure relief valve/undersized slip plates...) The management is expected to carry out appropriate hazard identification and risk assessment for all maintenance jobs and provide adequate data for the maintenance workers and supervisors and to apply the same in managing maintenance safety. Various ideas, thoughts and comments from the workforce and practical constraints which affect hazard analysis and risk assessment for maintenance activities must be tackled upon before taking up the work either through a work permit or by a standard procedure. The issue of maintenance control in vessels and confined spaces requires assessment, withdrawal from service, isolation,

cleaning/purging, test and certification, safety precautions, completion and return of vessel. Therefore after every maintenance work, the plant engineer must evaluate the effectiveness of hazard identification and risk assessment methods used so as to assess whether the method ensured a safe maintenance work or not.

In spite of implementation of recommendations based on hazard identification study, failure happens when the load exceeds the strength of the components. There are many factors which cause the load to be higher or strength lower than expected by design. Factors which increase the strength include internal residual stress, wear & tear and corrosion. Factors which reduce strength include fatigue, sleep and others. The traditional method of allowing for these factors is use of a safety factor which has been discussed by Mr. Frank P. Lees (Vol. I, P 114-1980) and the same is given here.



- A = Assumed static strength
- B = Design working stress
- C = Factors increasing stress
- D = Factors reducing strength

Design Safety Margin	=	A – B
Margin of Ignorance	=	C + D
Actual Safety Margin	=	A – (B+C+D) = E
Design Safety Factor	=	A/B
Actual Safety Factor	=	A/(B+C+D)

It could be seen that the value for C & D can be managed to a lower side by following Hazard Management and Safe Maintenance System. The overall failure rate and failure rates in individual failure makes variations. The failure rate with time must be studied with reference to conditions, performance and detection. The detection is also classified as revealed and unrevealed and these modes are very important in maintenance of instruments.

MAINTENANCE ANALYSIS

One of the objectives of the occupiers is to have a dynamic maintenance policy based on maintenance analysis. The following are key components of a maintenance analysis system.

1. Maintenance Activities
2. Maintenance Risk
3. Failure Regimes
4. Wear out Failure

5. Maintenance Inspection
6. Early Failure
7. Repair and Reconditioning

TRAINING FOR MAINTENANCE

All risk assessment is required to be carried out by appropriately trained persons under suitable supervision of a knowledgeable and competent person. The risk rating and priority of action required must be listed and discussed before put into action. They must look into the assumption made during the design stage also for effective maintenance safety system. As a part of risk management, all maintenance equipments like tools, lifting equipments along with accessories, mobile equipments and others must be compatible with the maintenance requirement. Especially the tools which have limited value / usage must have specific user restrictions. Hammers/spanners are considered as a possible ignition source. Some tools tend to burr.

Particles can sometime get embedded which will reduce non-spark character. These are few of the aspects which require the attention of training and maintenance crews. The safety professionals in consultation with other departments must highlight the importance of effective on-the-job training schedules for maintenance crews. Many of the training schedules of factories do not reflect this requirement. Naturally such factories will be spending more on maintenance cost and increased downtime.

Maintenance workers are not much knowledgeable about design aspects and hence workers performing maintenance jobs must be adequately informed and trained about the hazards / risks already identified and the likely risk which may emerge while carrying out the maintenance activity. For example during some maintenance activity, workers disable protective devices to perform their task, but very little data is made available to them about the consequences of disabling the devices. Even the injury / fatality records, accident investigation reports, inspection records do not provide much inputs to substantiate the usefulness of risk assessment in maintenance safety. Similarly workers are not conversant with modifications made after design/ commissioning. Sometimes unauthorized modifications are also carried out wherein risk assessment is totally ignored. Such activities have their own characteristic hazards. Risk management during commissioning / immediately preceding pre-commissioning is very important because many modifications are made under work pressure during this period.

WAY AHEAD

The primary requirement for maintenance safety includes better and efficient design and easy to maintain equipment with improved training and sufficient knowledge on its design aspect. A maintenance safety chart is prepared in association with the maintenance workers to identify high risk tasks and to facilitate necessary skill through training for hazard identification and risk control. This is very essential since design engineers, equipment manufacturer, risk assessment specialists, supervisors and maintenance workers have different perceptions on risk level to be encountered while carrying out a maintenance job. This assumes more significance when process parameter exceeds limit much often.

The need of the hour is the maintenance safety management should be taken up as an integral part of manufacturing activity instead of creating it as an accessory service by all stakeholders which will surely result in increased maintenance discipline as well as create profitability to the corporate houses apart from complying with many requirements. Though the complexity of maintenance task and hazards makes it to look as a challenging one, practicing maintenance safety management is a better solution to reduce maintenance related injuries / equipment damages.

REFERENCE

1. Frank P. Lees (1980)- *Loss Prevention in the Process Industries-1980:Vol.I.*

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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 editorindosh@gmail.com. The proforma may be downloaded from DGFASLI website at www.dgfasli.nic.in.

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'.

SAFETY MEASURES ADOPTED FOR CARGO HANDLING IN THE SOUTHERN REGION PORTS

G.P.Nijalingappa

INTRODUCTION

The Government of India under Ministry of Labour & Employment, DGFASLI is enforcing Dock Workers Safety, Health & Welfare (SH&W) Act, 1986. Section 21 of the said Act provides provisions for formulation of Dock Workers (SH&W) Rules & Regulation 1990 which are implemented through DGFASLI organization; these rules are in accordance with the ILO convention 152; mainly, the Regulation emphasizes on safety of various activities being carried out in the major ports of India and each major port is having an office of Inspectorate Dock Safety located mostly in the port premises; It has three regions - Eastern, Western and Southern region. The Southern region is located in Chennai, the ports which are coming under this region are: Chennai Port, Ennore Port, Tuticorin Port, Kochi Port and New Mangaluru Port. The safety measures followed in the Major Ports while handling various cargoes coming under the Southern Region viz, Chennai Port, Ennore Port, Tuticorin Port, Kochi Port and New Mangaluru Port are being discussed in this article.

HANDLING OF PETROLEUM OIL LIQUID CARGO

Most of the major ports handling Petroleum Products (POL) like Naphtha, Furnace oil, LPG, Diesel, Liquid Ammonia etc., let them through pipeline from the unloading point of the vessel to the storage terminals. During the course of transportation they have a good communication system from the terminals to the unloading point and vice-versa. Fire fighting systems are provided by the port trust as per the requirements. All the terminals follow the rules stipulated under MSIHC Rules.



Fig 1: Handling of liquid cargo

HANDLING OF BULK CARGO

Fertilizers (like urea, MOP, DAP), Copper concentration, Gypsum, Limestone etc., are handled in bulk at Tuticorin and New Mangaluru Ports, whereas in other ports quantity of handling such cargo is less. The safety measures followed in this type of cargo handling are mainly by crabs, which are used for discharging of cargo from the vessel to shore / directly on to the trucks using hopper like stretchers on the wharf, this system reduces spillage of cargo. Pay loaders are used inside the hold to

bring the cargo in to the square of the hatch as and when required, in this way accident to dock workers are minimized. The Personal Protective Equipment like disposable type of mask is provided to prevent inhalation of dust and also the trucks carrying such cargoes are covered with tarpaulin to minimize the spillage of cargo, trucks are usually loaded up to the body level only, lest they are not allowed in the port premises. While handling dry bulk fertilizers like rock phosphate and sulphur etc., disposable masks are provided along with goggles to dock workers.

Dry bulk cargo (coal handling) in the ports like Chennai, Tuticorin and Ennore, use conveyor system to transport cargo from the vessel to the stock yards from where it will be loaded on to the trucks using mechanical equipment, later on that will be transported to the owner's location through the trucks. The coal conveyor has a closed system in which there is no possibility of exposure of dust to atmosphere, or to any dock works. At Tuticorin, the conveyor system has reduced the exposure of Dock workers to the hazards. Hence, the rate of accidents in such areas has been reduced; water sprinklers are provided at the unloading point of coal on the conveyor system to suppress dust and all along the road and also from the jetty areas to unloading yards. During unloading in the yards, water sprinklers are provided to spray water over the coal stack in order to suppress the dusty atmosphere, from there it will be loaded on to the trucks and then the trucks carrying coal are covered with tarpaulin. The dock workers are provided with PPEs like safety shoes, nose mask, helmet goggles etc. It has been followed in all the southern region parts. In addition to above, washing of tyres, cleaning facilities are available in Chennai Port, in order to avoid coal sticking to tyres of the trucks.



Fig 2: Mechanical Handling of Bulk Cargo

Other dry bulk cargo is cement, river sand, sugar, salt etc. The cement is directly pumped through the pipelines. Such systems prevail in Kochi Port and New Mangaluru

Port. The work was safely and successfully carried out in these ports, i.e. not exposing dock workers to hazards. Iron ore is also handled in Chennai, Ennore and New Mangaluru Ports using wire net slings. These activities of cargo handling are not much in Ennore Port as it is in the construction stage. Reflector jackets are provided to all the dock workers working in Chennai Port during day and night time. This facilitates to avoid road accidents etc., in the Port and Dock area. Bulk cargoes like sugar logs, containers general cargo etc., are being handled in most of the ports.



Fig 3: Landing of Coal from the Vessel through conveyor system leading to reduction in Coal Dust Pollution

BREAK BULK CARGO HANDLING

Bagged cargo is handled at Chennai, Tuticorin, Kochi and New Mangaluru Ports. The bagged cargo is handled with the help of endless sling and net sling which are made of poly propylene and due care is taken to ensure the use of proper slings, which prevents the cargo falling from the sling.

Sugar is handled in southern ports (especially in Tuticorin Port) and is dumped into the hopper and then transferred into jumbo bags. The empty bags are plotted in the trucks before transferring the cargo into the bags from the hopper. Logs are handled in almost all the southern region ports.

The DGFASLI through its Inspectorate Dock Safety Division insists to use grabs and leaf loaders while handling logs from ships to the trucks on the wharf. This system is yet to be adopted in Chennai, Kochi and New Mangaluru Ports. They are all following the old system of using wire rope slings. In due course of time such mechanized system will be regularized in rest of the ports. Thus it avoids the exposure of dock workers to such hazards, thereby avoiding the rate of accidents, while transporting timber logs. Side stanchions and lashing of the logs on the truck are adapted to prevent the logs from falling. Dock workers while working in those areas have been provided with safety helmets, safety shoes, hand gloves etc.

Granite Blocks: Almost all the major ports of Southern region are handling granite blocks of various sizes and

dimensions with the help of shore cranes, ship cranes etc., while handling heavy blocks yo-yo operations are carried out very safely; ladders are being used in the holds for moving over the stack. General safety precautions have been given to the dock workers along with Personal Protective Equipments like helmet, gloves, safety shoes etc.

CONTAINER HANDLING

Containers handling activities have become more and more popular nowadays in the port sectors from the safety point of view. This safe method of handling has encouraged the entrepreneurs to have more containerized cargos in the port.

At present Chennai, Kochi and Tuticorin have separate full-fledged container terminals. With mechanized, modern container handling facilities viz. RTG Cranes, Quay cranes, mobile harbor cranes and reach stackers and trailers are being used while loading and unloading and transporting of containers, such mechanized system contains the involvement of dock workers. These mechanized modern systems contribute to reduce the rate of accident in such areas. New Mangaluru port and Ennore Port are the only two Ports which need to be equipped with the above said facilities. Till today New Mangaluru port is using container spreaders with manual operations using ship and shore cranes, whereas Ennore Port is in the construction stage, also they are in the process of mechanizing their facilities to meet demand from the market.

In every port labourers have been employed for sweeping/cleaning the spillage cargo on the roads. Also the mechanical equipments like sweeping machine are also continuously used for sweeping the spillage cargo. The labourers have been provided with PPEs like helmet, reflector jackets, shoes etc.

In addition to the above, once in quarter, critical safety issues are discussed in the safety committee meeting and executive decisions are being taken to adopt for safe dock work. In the month of March, every Port conducts safety week celebrations with a view to enhance the safety awareness among the dock works.

CONCLUSION

The Inspectorate of Dock Safety in the major ports enforces the provision of the Dock worker (SH&W) Act 1996 & Regulation 1990 to ensure the safety and health of dock workers working in the major ports.

G.P.Nijalingappa
Deputy Director (Safety)
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27TH CONFERENCE OF INSPECTORS OF DOCK SAFETY HELD AT GANDHIDHAM (KANDLA) ON 7TH & 8TH SEPTEMBER, 2010



Delivering the inaugural address is Shri P.D.Vaghela, Chairman, Kandla Port Trust. Seated from the left: Shri D.K.Saxena, Asst. Director, IDS, Kandla; Shri S.N.Borkar, Deputy Director (Staff Training & Productivity) and In-charge (Dock Safety), DGFASLI, Mumbai; Shri G.M.E.K.Raj, Deputy Director General & Head of Department, DGFASLI, Mumbai; Shri M.A.Bhaskarachar, Deputy Chairman, Kandla Port Trust and Shri B.N.Jha, Deputy Director (Safety), Inspectorate of Dock Safety, Mumbai.

The Conference of Inspectors of Dock Safety is held annually to discuss the important issues regarding the enforcement of the dock safety statutes.

The 27th Conference was held at Gandhidham, Kandla on 7th and 8th September 2010. The conference was attended by fourteen inspectors from eleven Inspectorates of Dock Safety Offices located in the eleven major ports across the country.

Shri S.N.Borkar, Deputy Director (Staff Training & Productivity) and In-charge (Dock Safety), DGFASLI, Mumbai, welcomed all the guest delegates for the conference.

The Conference was inaugurated by Shri P.D.Vaghela, Chairman, Kandla Port Trust, Kandla. In his inaugural address, he highlighted the sufferings of labourers during the industrial revolution and said that it was only in the beginning of the 19th century that development took place with regards to the labourers' rights and their safety and health. He mentioned five aspects related to the dock safety viz. awareness, training, maintenance, basic amenities and death at young age. He said that the laws related to safety and health should not be diluted in the name of liberalization and the aim should be of inclusive growth.

Shri G.M.E.K.Raj, Deputy Director General & Head of Department, DGFASLI, Mumbai, delivered the presidential address. He said that the number of fatalities in the major ports was mostly due to transport equipments and highlighted the need for training of the transport equipments' drivers. He expressed concern for isolated storage and hazardous cargo stored in the port area and said that DGFASLI had constituted a committee to identify the hazardous cargo lying in the port and suggest suitable measures for disposal of the same. He further said that the amendments to the Dock Safety Statutes was in

process. He also stressed upon the need for sharing best practices among the ports to improve the safety and health of the dock workers.

Shri B.N.Jha, Deputy Director (Safety), Inspectorate of Dock Safety, Mumbai, delivered the vote of thanks.

वार्तापत्राच्या अर्थातर्फे एवढेच संपादन

वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे. यासाठी वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे. यासाठी वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे. यासाठी वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे.

1. वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे. यासाठी वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे. यासाठी वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे. यासाठी वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे.
2. वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे. यासाठी वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे. यासाठी वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे. यासाठी वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे.
3. वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे. यासाठी वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे. यासाठी वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे. यासाठी वार्तापत्राच्या अर्थातर्फे एवढेच संपादन हे एक महत्त्वाचे कार्य आहे.

INVITING ARTICLE FOR INDOSHNEWS

INDOSHNEWS is a quarterly newsletter that facilitates exchange of ideas and data developed through research, study and surveys in the areas of occupational safety and health. DGFASLI invites articles from individuals, industry, industrial associations, trade unions, professional bodies etc. having information on OS&H and willing to share the same with others at the national and international level.

1. Manuscripts for publication should be typed in double space within 3 to 4 A4 size sheets only on one side of the paper and sent in duplicate to the Editor-in-Chief.
2. Once the manuscripts are accepted for publication, publisher reserves the right to make editorial changes as may be necessary to make the article suitable for publication; and publisher reserves the right not to proceed with publication for whatever reason.
3. Authors should take care to ensure the accuracy of data and reference.

CENTRAL LABOUR INSTITUTE: MUMBAI

During the quarter from July 2010 to September 2010, Central Labour Institute carried out several activities of which important ones are given below.

**Studies**

Assessment of Airborne Chemical Contaminants in the Workplace Environment of an Automobile Plant in Maharashtra (Metkari, M.A., Industrial Hygiene Division, Central Labour Institute, Mumbai)

Assessment of Airborne Chemical Contaminants in the Paint Shop of an Automobile Plant in Maharashtra (Metkari, M.A., Industrial Hygiene Division, Central Labour Institute, Mumbai)

Assessment of Airborne Contaminants in the Workzone of a Defence Factory in Maharashtra (Mandre, M.K., Industrial Hygiene Division, Central Labour Institute, Mumbai)

Assessment of Airborne Contaminants in the Workzone of an Oil Industry in Maharashtra (Mandre, M.K., Industrial Hygiene Division, Central Labour Institute, Mumbai)

Assessment of Airborne Contaminants in the Workzone of Two Engineering Industries in Maharashtra (Mandre, M.K., Industrial Hygiene Division, Central Labour Institute, Mumbai)

Dispersion Modelling and Impact Assessment of an Organic Company in Maharashtra (Gautam, S.S., Sharma, S.C., Major Hazards & Chemical Safety Division, Central Labour Institute, Mumbai)

Illumination Study at Telecommunication Equipment Manufacturing Unit in Maharashtra (Subhash Chandra, Environmental Engineering Division, Central Labour Institute, Mumbai)

Training Programme

The Safety Division started the admission and classes for *Advanced Diploma in Industrial Safety* for the academic year 2010-11 from July 05, 2010. Twenty six candidates were admitted to the course.

The Safety Division conducted a three-week *Basic course for Inspector of Factories* from September 06 to 24, 2010. Twenty four Inspectors/Assistant Directors of Factories from five states participated in the course.

The Safety Division conducted a fifteen-day specially designed advanced training programme for *Getting Accredited as Safety Auditor for Safety Professionals* from September 20 to October 08, 2010. Thirteen safety professionals attended this training.

The Staff Training Division alongwith the Productivity Division conducted a three-day inplant training programme on *Train the Trainers* from July 27 to 29, 2010 at Chennai Port Trust. The programme was attended by twenty one port trust senior officials.

The Productivity Division conducted a three-day training programme on *Productivity and Quality Improvements through Effective Employee Participation* from September 27 to 29, 2010. Twenty eight participants from three organisations attended the programme.

The Industrial Psychology Division conducted a one-day in-plant training programme on *Behaviour Based Safety* at Bongaigaon Refinery on July 01, 2010. The programme was attended by twenty eight participants.

The Industrial Psychology Division conducted a one-day in-plant training programme on *Behaviour Based Safety* at Kakrapar Atomic Power Station on July 08, 2010. The programme was attended by forty three participants.

The Industrial Psychology Division conducted a three-day training programme on *Making Safety Committee More Effective* from August 25 to 27, 2010. The programme was attended by sixteen participants from sixteen different organisations.

The Physiology Division conducted a three-day training programme on *Ergonomics in Ship Building Works* from July 13 to 15, 2010. The programme was attended by 12 participants from four organisations.

The Major Hazards & Chemical Safety Division conducted a three-day training programme on *Occupational Safety and Health Management in Process Industries* on July 21 to 23, 2010. Eighteen participants from four organisations attended the programme.

Workshops/Seminars/Conference

The Staff Training Division conducted a Professional Interaction Update Seminar (PIUS) on First Aid and Emergency Care on July 08, 2010. The seminar was attended by twenty three officers & technical staff of the Institute.

The Environmental Engineering Division conducted a three-day training workshop on *Control of Industrial Noise* from August 18 to 20, 2010. Five officers from one organisation participated in the workshop.

Paper/Presentation/Talks

Shri R.N.Meena, Dy. Director (Staff Training/Productivity), delivered two talks on *Productivity Improvement* on July 07 and 22, 2010 at Central Board of Worker Education (CBWE). The session was attended by twenty participants from one organization.

REGIONAL LABOUR INSTITUTE, CHENNAI

During the quarter from July 2010 to September 2010, Regional Labour Institute carried out the following technical activities

**Studies**

Safety Audit at an Industrial Bearings Manufacturing Unit in Tamil Nadu (Elangovan, R.K., Safety Division, Regional Labour Institute, Chennai)

Hazard Identification Study of an Air Fin Coolers Manufacturing Plant in Tamil Nadu (Elangovan, R.K., Safety Division, Regional Labour Institute, Chennai)

Evaluation Study of Airborne Concentration of Ethyl Mercaptan Levels in an LPG Storage Terminal in Tamilnadu (Sreeramulu, A., Vasu, G., Industrial Hygiene Division, Regional Labour Institute, Chennai)

Environmental Study in two Plants Engaged in the Production of Automobile Brake Linings in Tamil Nadu (Dhende, K.N., Rengaraj, C., and Vasu, G., Industrial Hygiene Division, Regional Labour Institute, Chennai)

Training Programme

The Institute conducted a one day in-plant training programme on *Safety Aspects in Textile Industry* on July 16, 2010 at M/s Madura Coats, Tirunelveli. The programme was attended by thirty three management executives from the plant.

The Institute conducted a two-day training programme on *Occupational Safety and Health for Assistant Inspectors of Factories* on August 02 and 03, 2010. The training programme was attended by four Inspectors of Factories, Government of Tamilnadu.

The Institute conducted a three-day training programme on *Safety Audit* from August 24 to 26, 2010. The training programme was attended by sixty four participants from thirty eight organizations.

The Institute conducted a two-day in-plant training programme on *Safety Audit* on August 31, 2010 and September 01, 2010 at the Tuticorin Port. The training programme was attended by sixteen management executives from the port.

The Institute conducted a two-day training programme on *Work Environment Monitoring in Hazardous Process Industries* on September 28 and 29, 2010. The training programme was attended by eleven participants from eight organizations.

The Institute conducted a four-day training programme on *Fire and Explosion in Major Accident Hazard Industries/ Chemical Industries for Inspectors of Factories* from September 21 to 24, 2010. Twenty three participants from ten organizations attended the training programme.

The Institute conducted a two-day in-plant safety training programme in a Petroleum Industry on September 23 and 24, 2010. The programme was attended by twenty executives from the same plant.

Workshops/Seminars/Conference

The Institute conducted a one day national seminar on *Occupational Safety and Health in IT and ITES Industries* on July 26, 2010. The Seminar was attended by two hundred and twenty five participants from forty nine organizations.

Paper/Presentations/Talks

Dr.R.K.Elangovan, Director (Safety), delivered a talk on *Safety Management in Industries* in A.M.Training Academy, Chennai on July 01, 2010. The programme was attended by thirty management executives.

Dr.R.K.Elangovan, Director (Safety), delivered a talk on *Child Labour & Issues of Occupational Hazards* in a training programme on Child Labour for Govt. Labour Officers and Factory Inspectors conducted by Tamilnadu Institute of Labour Studies, Chennai on July 08, 2010. The programme was attended by thirty enforcement officers.

Dr.R.K.Elangovan, Director (Safety), delivered a talk on *Construction Safety Management* at the Safety Month Celebration organized by Bharatiya Nabhikiya Vidyut Nigam Ltd. (BHAVINI), Kalpakkam on July 30, 2010. The programme was attended by management executives, supervisors, trade union leaders and workers. Seventy participants attended the programme.

Dr.R.K.Elangovan, Director (Safety), delivered a talk on *Disaster Management-Business Continuity Planning* in the National Seminar on *Occupational Safety and Health in IT and ITES Industries* organized by the Institute on July 26, 2010. The Seminar was attended by two hundred twenty five participants from forty nine organizations.

Shri K.Balasubramanian, Director (Safety), delivered a talk on *Accident Prevention and Safety in Handling of Materials* in the three-day training programme on *Train the Trainers* conducted at Chennai Port on July 28, 2010. The programme was attended by twenty five management executives.

Dr.R.K.Elangovan, Director (Safety), delivered a talk on *Safety in Industries and Nano Technology* in a Seminar on Industrial Safety conducted by Govt. College of Technology, Coimbatore on August 13, 2010 which was attended by two hundred participants.

Dr.R.K.Elangovan, Director (Safety), delivered a talk on *Pipeline Safety/Precautions in Breaking Pipelines* at Sri Ramachandra University, Porur, Chennai. The

programme was attended by fifteen students of M.Sc. (Industrial Health and Safety).

Dr.R.K.Elangovan, Director (Safety), delivered a talk on *Industrial Safety, Health and Environment* at TIMKEN, Chengalpattu on August 20, 2010. The programme was attended by forty managers.

Dr.R.K.Elangovan, Director (Safety), delivered a talk on *Accident Investigation, Reporting and Analysis of Causative Factors* in a seminar on *Trends and Challenges in Construction Management – TQM & Safety* organized by Construction Industry Development Council, Delhi on August 23, 2010 which was attended by twenty five management executives.

Dr.R.K.Elangovan, Director (Safety) presented the paper entitled *Development and Implementation of Workplace Safety and Health Strategies in India* at the Conference held at Suntec Convention Centre, Singapore on September 15, 2010. The conference was attended by seven hundred fifty participants.

REGIONAL LABOUR INSTITUTE, KOLKATA

During the quarter from July 2010 to September 2010, Regional Labour Institute carried out studies and training programmes etc. which are described here.



Studies

Safety Audit at Iron and Steel Industry in Orissa (Chattopadhyay, H., Kumar, S., Industrial Safety Division, Regional Labour Institute, Kolkata).

Occupational Safety & Health Audit at Iron and Steel Industry in Orissa (Chattopadhyay, H., Dutta Choudhury, S., Industrial Safety Division, Regional Labour Institute, Kolkata)

Training programmes

The Institute started an *Advance Diploma in Industrial Safety* for the academic year 2010-11 from July 20, 2010. Thirty one candidates were admitted to the course.

The Institute conducted a five-day training programme on *Safety in Construction Industry for the Managers, Engineers, Executives & Supervisors Overseeing the Safety Activities in Construction Industries* from July 20 to 24, 2010. Sixteen participants from five organisations attended the programme.

The Institute conducted a five-day Faculty Development Programme on *Occupational Safety & Health for the Managers, Engineers, Executives & Supervisors* from July 26 to 29, 2010. Nine participants from five organisations attended the programme.

The Institute conducted a five-day training programme on *Fire Safety & its Management* for the Managers, Engineers, Executives & Supervisors who are taking charges of the safety aspects relating to fire safety in all manufacturing, port and construction industries from August 23 to 27, 2010. Twelve candidates from eight organisations attended the programme.

The Institute conducted a five-day training programme on *Chemical Safety for the Inspectors of Factories* from September 06 to 10, 2010. Seventeen Inspectors of Factories from ten states attended the programme.

The Institute conducted a five-day training programme on *Safety in Construction Industry for the Managers, Engineers, Executives & Supervisors Overseeing the Safety Activities in Construction Industries* from September 27 to 01, 2010. Seventeen participants from six organisations attended the programme.

Paper/Presentations/Talks

Shri U. K. Das, Director (Safety), delivered a talk on *Implementation of National Policy on Safety, Health and Environment at Work Place* at Orissa State Safety Conclave 2010 on September 14 and 15, 2010 at Bhubaneswar. One hundred twenty participants from seventy two organisations attended the programme.

REGIONAL LABOUR INSTITUTE, KANPUR

During the quarter from July 2010 to September 2010, Regional Labour Institute carried out training programmes which are described here.



Training programmes

The Institute started an *Advance Diploma in Industrial Safety* for the academic year 2010-11 from July 19, 2010. Forty seven candidates were admitted to the course.

The Institute conducted a three-day training programme on *Safety & Law* from September 06 to 08, 2010. Eight participants representing six organizations participated in the programme.

The Institute conducted an orientation programme on *Occupational Health for Paramedical Staff* from September 13 to 15, 2010. Seventeen participants from nine organizations participated in the programme.

The Institute conducted a five-day training programme on *Safety & Health Management* from September 28, 2010 to October 01, 2010. Twenty participants participated in the programme.

REGIONAL LABOUR INSTITUTE, FARIDABAD

During the quarter from July 2010 to September 2010, Regional Labour Institute carried out the following activities.



Workshops/Seminars/Conference

The Institute conducted a two day Intensive Training workshop on *Workplace Health Promotion* from September 26 to 27, 2010 in collaboration with Manavrachna International University, Faridabad. Thirty participants from twenty five organisations attended the programme.

INDOSHNET

Ministry of Labour & Employment, Government of India, is developing a National Network on Occupational Safety and Health information system known as INDOSHNET. Directorate General Factory Advice Service & Labour Institutes (DGFASLI), an attached office of the Ministry of Labour will act as a facilitator of the network system. The objective of the network is reinforcement and sharing of national Occupational Safety and Health (OS&H) information on a no-profit- no-loss basis with a view to pooling our information resources for mutual benefit. The sharing of information will not only confine to the national level but also includes international sources. The communication of information will be through E-mail as well as postal/courier service. DGFASLI invites industrial organisations, institutions, industry associations, trade unions, professional bodies and non-governmental organisations having information on OS&H and willing to share the same with others at the national and international level to participate as members in the network. Interested agencies may please write proforma of organizational profile to Director General, DGFASLI, Central Labour Institute, N.S.Mankiker Marg, Sion, Mumbai 400022.

Note: Those who have responded to our earlier communication and sent organisation profile in the prescribed format need not write again.

SAFETY AWARENESS

Organizations must invest time and financial resources in utilizing vendors and third-party trainers to prepare employees. Organization-wide training must be followed by coaching from all levels of the organization. Each employee must understand the importance of safety.

Source: [Behavior Based Safety Coaching Strategies | eHow.com](http://www.ehow.com/list_7488033_behavior-based-safety-coaching-strategies.html#ixzz1BLIMp9Rh) http://www.ehow.com/list_7488033_behavior-based-safety-coaching-strategies.html#ixzz1BLIMp9Rh

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 and 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 creating 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 in Mumbai, Jawaharlal Nehru Port, Kandla, Mormugao, New Mangalore, Chennai, Tuticorin, Cochin, Visakhapatnam, Kolkata, and Paradip.

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. The Regional Labour Institutes are a scaled-down version of the Central Labour Institute and cater to the needs of their respective regions through its specialty divisions like Industrial Safety, Industrial Hygiene and Medical. The organization is poised to grow further, and meet the increased demands on it. In a developing country with a large number of industries having diverse and complex nature, the task of protecting safety and health of workers is an uphill task. 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. It is committed to the goal of making the workplace safer.

Visit us at: www.dgfasli.nic.in

Assessment of Airborne Chemical Contaminants in the Workplace Environment of an Automobile Plant in Maharashtra (Metkari, M.A., Industrial Hygiene Division, Central Labour Institute, Mumbai)

The plant is engaged in manufacturing a range of models of cars, multijet diesel engines and fire gasoline engines. An Industrial Hygiene study was carried out to assess the levels of the airborne chemical contaminants, viz. Oil Mist, Particulate Matter, Welding Fumes, Carbon Monoxide and Solvent Vapours prevailing at various locations of the plant. Among the findings, the mean airborne concentration of Oil Mist was found to be 6.3 mg/m³ at a location, which had exceeded its TLV and PLE of 5.0 mg/m³. The mean airborne concentration of Trimethyl Benzene was obtained to be 31.23 ppm which had exceeded its TLV of 25 ppm. Moreover, during vehicle testing the mean airborne concentration of Carbon Monoxide (29.5 ppm) also exceeded its TLV of 25 ppm. Recommendations offered were provision of exhaust system, regular checking of exhaust systems for efficiency, use of appropriate PPE and their procurement as per BIS standards, Health and Safety training to employees, etc.

Assessment of Airborne Chemical Contaminants in the Paint Shop of an Automobile Plant in Maharashtra (Metkari, M.A., Industrial Hygiene Division, Central Labour Institute, Mumbai)

In the Paint Shop of the Automobile Plant, various painting processes involve use of several chemicals, paints and solvents which pose occupational health hazards like generation of acid and alkaline mists in the pre-treatment, solvent vapours in the painting and paint mixing operations. A Workplace Air Monitoring study was carried out in the Paint Shop to assess the levels of the airborne chemical contaminants. It was found that the maximum airborne concentration of Phosphoric Acid at Pre-treatment Area was found to be 1.1 mg/m³ which had exceeded the TLV and PLE of 1.0 mg/m³. During touch up manual spraying, the mean airborne concentration of Xylene was obtained to be 115.5 ppm against its TLV and PLE of 100 ppm. The airborne concentrations of the remaining chemical contaminants at their respective locations were found to be within their TLVs and PLEs. Provision of full-fledged spray booth for the touch up spray painting, use of appropriate PPE and their procurement as per BIS standards, Health and Safety training to employees, regular workplace air monitoring, etc. were the recommendations made.

Assessment of Airborne Contaminants in the Workzone of a Defence Factory in Maharashtra (Mandre, M.K., Industrial Hygiene Division, Central Labour Institute, Mumbai)

Factory is engaged in the manufacture of defence goods such as empty shell cartridges for gun firing. The study was carried out for evaluation of the levels of airborne contaminants such as particulate matter, iron dust, copper dust/ fumes, zinc dust/fumes, carbon black, oil mist, aluminium dust/fumes, hydrochloric acid mist, sulphuric acid mist, sodium hydroxide mist and chlorine gas in their workplace environment to which workers are exposed in different shops of the factory. Airborne concentrations of all chemicals are well below their

respective PLE/TLV permissible limits of exposure except oil mist, and carbon black. The recommendations such as installation of local exhaust system at furnace operation, improvement in the housekeeping, lateral exhaust system at Zinc plating operation, effective exhaust system for oil mist exposure at heavy rolling mill, use of dust respirator near polishing operation were made in the report.

Assessment of Airborne Contaminants in the Workzone of an Oil Industry in Maharashtra (Mandre, M.K., Industrial Hygiene Division, Central Labour Institute, Mumbai)

Industry is engaged in the manufacture of lubricating oil which is used for automobiles. The study was carried out for evaluation of the levels of airborne contaminants such as oil mist and solvent vapours in their workplace environment to which workers are exposed in the factory. Airborne concentrations of all chemicals are well below their respective PLE/TLV permissible limits of exposure. The recommendations such as education and training to the workers about safe work practices and use of Personal protective equipments were made in the report.

Assessment of Airborne Contaminants in the Workzone of an Engineering Industry in Maharashtra (Mandre, M.K., Industrial Hygiene Division, Central Labour Institute, Mumbai)

Industry is engaged in the manufacture of Files & Drill bits of different size and shape. The study was carried out for evaluation of the levels of airborne contaminants such as particulate matter, silica dust, oil mist, Hydrochloric acid mist and Sodium Cyanide in their workplace environment to which workers are exposed in different departments such as scouring, cyanide furnace, grinding tang tempering of the factory. Airborne concentrations of all chemicals are well below their respective PLE/TLV permissible limits of exposure except of oil mist. The recommendations such as installation of effective exhaust system for oil mist exposure at grinding operation, use of respirators, avoid direct contact of furnace solution at Cyanide bath operation were made in the report.

Dispersion Modelling and Impact Assessment of an Organic Company in Maharashtra (Gautam, S.S., Sharma, S.C., Major Hazards & Chemical Safety Division, Central Labour Institute, Mumbai)

The document is report of dispersion modeling and impact assessment carried out for Acrylonitrile, Methyl tertiary butyl ether, Sulphur tri-oxide, Iso-butene, Acetone, Di-isobutene storage tanks in an organic chemical manufacturing plant in Maharashtra on the request of the management with the help of computer model for dispersion and damage. The study analysed the likely damages in case of releases from the Acrylonitrile, Methyl tertiary butyl ether, Sulphur tri-oxide, Iso-butene, Acetone, Di-isobutene storage tanks of different capacities in case of breaking of any nozzle connection at the lower side of the tanks. The worst case and credible scenario is likely instantaneous toxic release of chemicals on breaking of pipes/nozzles in the storages, damage distances due to heat radiation from the jet fire and pool fire and distances in windward direction upto which the flammable concentrations of the spilled chemicals may reach. The toxic level of concentration on spillage of Methanol into

the dyke wall that may reach upto 47 meters in the down wind speed 5.0 m/sec. 1% lethal may occur upto about 48 meters from the dyke wall on exposure upto 10 sec in case of fire in the spilled pool formed by the dyke wall of Methyl tertiary butyl ether.

Illumination Study at Telecommunication Equipment Manufacturing Unit in Maharashtra (Subhash Chandra, Environmental Engineering Division, Central Labour Institute, Mumbai)

The unit is a Government of India enterprise telecommunication equipment manufacturing unit. Topic covered was to measure the illumination levels at different locations in the factory and to suggest the ways and means to improve the working conditions. Existing illumination levels during day and night time were measured through Extech light meter at about thirty five different locations including CT Box preparation area, switch board shop and SIM card production area. Data regarding watt-age, numbers and type of luminaries used and their maintenance was also recorded. The recommendations are furnished in the report. The study revealed that the illumination levels on most of the locations were within the permissible limit values as per the Factories Act.

Safety Audit at an Industrial Bearings Manufacturing Unit in Tamil Nadu (Elangovan, R.K., Safety Division, Regional Labour Institute, Chennai)

The unit is engaged in the manufacturing of industrial bearings was audited. The major recommendations made were preparing SOPs and SMPs incorporating safety provisions in them for all the operations and providing measures for imparting training on these among the workers, revising the existing on-site emergency plan conforming with the standards, testing and validation procedures for safety of critical equipment, providing emergency control centre as per the norms, ensuring safe access to all the work places and testing procedures for the earth pits.

Hazard Identification Study of an Air Fin Coolers Manufacturing Plant in Tamil Nadu (Elangovan, R.K., Safety Division, Regional Labour Institute, Chennai)

The company is in the energy sector manufacturing air fin coolers of the refineries and petro chemical industries. An opening meeting was conducted to discuss on the methodology of the hazard identification study in the plant. After the study, a closing meeting was conducted and the findings were presented to the management. The major findings of the hazard identification study were transportation safety, material handling safety, radiation safety, provision of non-return valves and flash back arresters on both hoses for Oxy LPS, Oxy Acetylene valves, safe access to all work places, fencing of elevated work places, electrical safety, contract workers training, testing and certification of lifting machines and lifting tackles and conduction of noise, illumination and ventilation study in the industry.

Evaluation Study of Airborne Concentration of Ethyl Mercaptan Levels in an LPG Storage Terminal in Tamilnadu (Sreeramulu, A., Vasu, G., Industrial Hygiene Division, Regional Labour Institute, Chennai)

The study was conducted in a LPG Storage Terminal. The terminal has a capacity to store 8500 MT of LPG in refrigerated condition. It is the first company in India to own a fully refrigerated large sized storage terminal in the private sector. Ethyl mercaptan injected in the line system when loading in to the line containers from the storage tank. As such LPG is odourless gas; detection of LPG is very difficult when leakages take place from the system due to failure of safety control system. The mercaptan is mixed with LPG to detect the even small leakages. Airborne levels of Ethyl Mercaptan at all the locations in production area and general atmosphere surrounding the Plant have been found below detectable level which is below the Permissible Exposure levels. However, precautionary and remedial measures should continue to be followed in order to maintain the level of Ethyl Mercaptan in work environment to minimum possible level and prevent the exposure of workers. Remedial measures have been suggested which includes procurement of adequate quantity of PPEs and to ensure all the operators and workers entering the work zone area should wear the respiratory protective masks to avoid inhalation of mercaptan vapours. It was also recommended to have a neutralization tank to neutralize the mercaptan in case of leakages. It was suggested to keep the ethyl mercaptan drums in a protected area away from sunlight

Environmental Study in a Plant Engaged in the Production of Automobile Brake Linings in Tamil Nadu (Dhende, K.N., Vasu, G., Industrial Hygiene Division, Regional Labour Institute, Chennai)

The study was conducted in a plant engaged in the production of brake linings for use in various types of automobiles. Asbestos fibres is one of the basic raw material used in the process. Samples of airborne asbestos fibres in different areas were collected on 25 mm membrane filter paper. After collection, the filter papers were transformed into transparent membrane using standard method recommended by AIA/BSI. The fibres were counted at 400 magnification using Phase Contrast Microscope and results were expressed as fibre/cc. The average concentration of asbestos fibres in compounding area, performing area and finishing area were found well below the PLE for asbestos fibre i.e. 1 fibre/cc. However, the remedial and preventive measures as laid down in the report of the previous study should be continuously followed. Further, the side openings provided in the bag opening and cutting system for movement of the pusher should be minimized and covered to the maximum extent possible in order to prevent the escape of fibres.

Safety Audit at Iron and Steel Factory in Orissa (Chattopadhyay, H., Kumar, S., Industrial Safety Division, Regional Labour Institute, Kolkata)

The document is a report of safety audit of an Integrated Iron and Steel Manufacturing Unit. The objective of the audit was to identify the hazards in the plant arising due to deviations from the applicable statutes, standards and codes. The plant contains DRI plant, Ferro-Chrome Plant, Mini Blast Furnace, Coke Oven Plant and produces both Sponge and Pig Iron. The methodology followed during audit was basically as per the BIS-14489. Strong

MATERIAL SAFETY DATA SHEET FOR ACETONE

The Library & Information Centre of Central Labour Institute has unique collection of Material Safety Data Sheet of about 1,20,000 chemicals/materials taken from Canadian Centre for Occupational Health & Safety. MSDS provides extensive coverage over safety perspective with detailed evaluation of health, fire and reactivity hazards. It also provides precaution as well as recommendation on handling, storage, personal protective equipment, accidental release etc. A brief Material Safety Data Sheet on few points for Acetone is given below.

PRODUCT NAME: ACETONE

SYNONYM: Dimethyl Ketone; 2-Propanone

HAZARDS IDENTIFICATION

Physical state: Liquid.

Odor: Pungent.

OSHA/HCS status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview: Danger!

Extremely flammable liquid and vapor. Harmful if inhaled or swallowed. Causes respiratory tract, eye and skin irritation. Causes damage to the following organs: respiratory tract, skin, central nervous system, eye, lens or cornea. Vapor may cause flash fire. Do not ingest. Avoid contact with skin and clothing. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Routes of entry: Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eyes: Irritating to eyes.

Skin: Irritating to skin.

Inhalation: Toxic by inhalation. Irritating to respiratory system.

Ingestion: Toxic if swallowed.

Carcinogenic effects: No known significant effects or critical hazards.

Mutagenic effects: No known significant effects or critical hazards.

Teratogenicity/Reproductive toxicity: No known significant effects or critical hazards.

Medical conditions aggravated by over-exposure: Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to the substance can produce target organs damage.

FIRST AID MEASURES

Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.

Skin contact: Get medical attention immediately. Flush

contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Inhalation: Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Ingestion: Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

FIRE FIGHTING MEASURES

Flammability of the product: Extremely flammable liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Products of combustion: These products are carbon oxides (CO, CO₂).

Extinguishing media

Suitable: Use dry chemical, CO₂, water spray (fog) or foam.

Not suitable: Do not use water jet.

Special exposure hazards: Not available.

Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Special remarks on fire hazards: Dangerous fire and explosion risk. Vapor may travel a considerable distance to source of ignition and flash back.

NOTE

The above details constitute part information of MSDS taken from Canadian Centre for Occupational Health and Safety. For complete MSDS write to MIS division, Central Labour Institute, Sion, Mumbai- 400

MATERIAL SAFETY DATA SHEET

022. MSDS on about 1,20,000 chemicals/materials are available with Central Labour Institute. Computer printout will be supplied on nominal charge.

Ph. No.:- 022-24092203, Fax. No.:- 022-24071986

TRAINING CALENDER FOR THE YEAR 2010: DGFASLI

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S.No	Title of the Programme	Period	Coordinator (Technical)
1.	Advanced Diploma in Industrial Safety (ADIS) 2010-11: First Teaching Term	July 01–2 nd Week of November	S.Bharathi /B.L.Bairwa
2.	Ergonomics-A tool for improving Safety, Health & Productivity at Ship Building Works	July 13-15	D.R.Krishna
3.	Occupational Safety & Health Management in Process Industries	July 21-23	S.C.Sharma
4.	Refresher Course on Occupational Health for Plant Medical Officers	August 09-13	Dr. S.S.Waghe
5.	Workshop on Industrial Noise	August 18-20	S.Chandra
6.	Making Safety Committee more Effective	August 25-27	P.K.Mohanty
7.	One Month Specialized Certificate Course in Safety and Health for Supervisory Personnel Engaged in Hazardous Process Industries	September 01-September 30	Dr.M.Rajaram
8.	Basic Course for Inspector of Factories	September 06-24	B.L.Bairwa
9.	Training Methodology for Trainers	September 07-09	N.K.Rustagi
10.	Training Workshop on Hazard & Operability (HAZOP) Studies	September 22-24	S.C.Sharma
11.	Ergonomics- A tool for improving services in Hotels, Malls and Hospitals	September 28-30	D.R.Krishna
12.	Training Programme on Occupational Health Nursing for Nurses & Paramedicals	October 04-08	Dr. S.S.Waghe
13.	Monitoring of Work Environment in Industries	October 06-08	Ms M.K.Mandre
14.	Ergonomics for Machine operators/ Service/Maintenance Personnel	October 19-21	D.R.Krishna
15.	Handling Problem Behaviour of Employees	November 10-12	P.K.Mohanty
16.	Refresher Course for Inspector of Factories	November 15-26	B.L.Bairwa
17.	Productivity & Quality through Effective Employee Participation	November 23-25	R.N.Meena
18.	Safety in Storage, Handling & Management of Hazardous Substances in Process Industries	November 24-26	S.C.Sharma
19.	Advanced Diploma in Industrial Safety (ADIS) 2010-11: Continued	December 01, 2010 - April 30, 2011	B.L.Bairwa
20.	Evaluation of Heat Stress to improve Productivity	December 07-09	D.R.Krishna
21.	Safety, Health and Environment Management in Chemical Industry	December 08-10	M.A.Metkari
22.	OSH-MS	December 14-16	Dr.M.Rajaram
23.	Impact of Environmental Pollutants & their Control at Work Place	December 20-22	S.Chandra
24.	Associate Fellow of Industrial Health (AFIH)	Dec.2010 - Feb 2011	Dr. P.P. Lanjewar

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S.No	Title of the Programme	Period	Coordinator
1.	Training Programme on Chemical Safety for Safety Committee Members	July 06-09	Dr. Brij Mohan
2.	Post Diploma Course on Industrial Safety 2010-2011	July 2010 - March 2011	S.K.Dwivedi
3.	Training Programme On Testing & Examination of Lifting Machines & Pressure Vessels	August 16-20	G.S.Pandey
4.	Training Programme on Safety & Law	September 06-08	A.K.Chakraborty
5.	Orientation Programme on Occupational Health for Para-Medical	September 13-15	Dr.C.Bhattachary

TRAINING CALENDER: DGFASLI

	Staff		a
6.	Seminar on "Emerging Issues on Safety and Health Management"	September 22	Dr. Brij Mohan
7.	Workshop on Monitoring of Work Environment and its Control	October 06-08	Dr. Brij Mohan
8.	One Month Certificate Course on Safety & Health	November 01- 30	A.K.Chakraborty
9.	Training Programme on Process Safety Management for Inspectors of Factories	December 06-10	Dr. Brij Mohan
10.	Workshop on Safety Audit	December 13-15	A.K.Chakraborty

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S.No	Title of the Programme	Period	Coordinator
1.	Diploma in Industrial Safety	July 2010 – April 2011	C.M.Nigli
2.	Occupational Safety and Health in Construction Industries	July 27-28	C.M.Nigli
3.	Safety Audit	August 24-26	C.M.Nigli
4.	Major Accident Hazard Control in Industries for Inspectors of Factories	September 21-24	A.Sreeramulu
5.	Management of Hazardous Substances in Chemical Industries	November 09-12	A.Sreeramulu
6.	Occupational Safety and Health in Construction Industries	December 07-08	K.Balasubramanian

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S.No	Title of the Programme	Period	Coordinator
1.	One year Diploma in Safety Engineering Course	July 14	H. Chattopadhyay
2.	Faculty Development Programme on "Occupational Safety & Health"	July 26- 30	H. Chattopadhyay
3.	Identification, Evaluation and Control of Hazards in Industries.	August 16-20	Dr.S.N.Banerjee
4.	Training Programme on Chemical Safety	September 06-10	U.K.Das
5.	Safety in Construction Industries	Sept 27 - Oct 01	U.K.Das
6.	"Occupational Health and environmental Medicine for Medical & non-medical executives of the industries"	October 25-29	Dr. S.K.Haldar
7.	Workers Development Programme	November 10- 11	Dr.S.N.Banerjee
8.	One Month Specialized Certificate Course in "Safety & Health" for Supervisory working in Hazard Industries	November 15 - December 14	H. Chattopadhyay
9.	Associate Fellow of Industrial Health	Dec 01, 2010 – Feb 30, 2011	Dr. S.K.Haldar

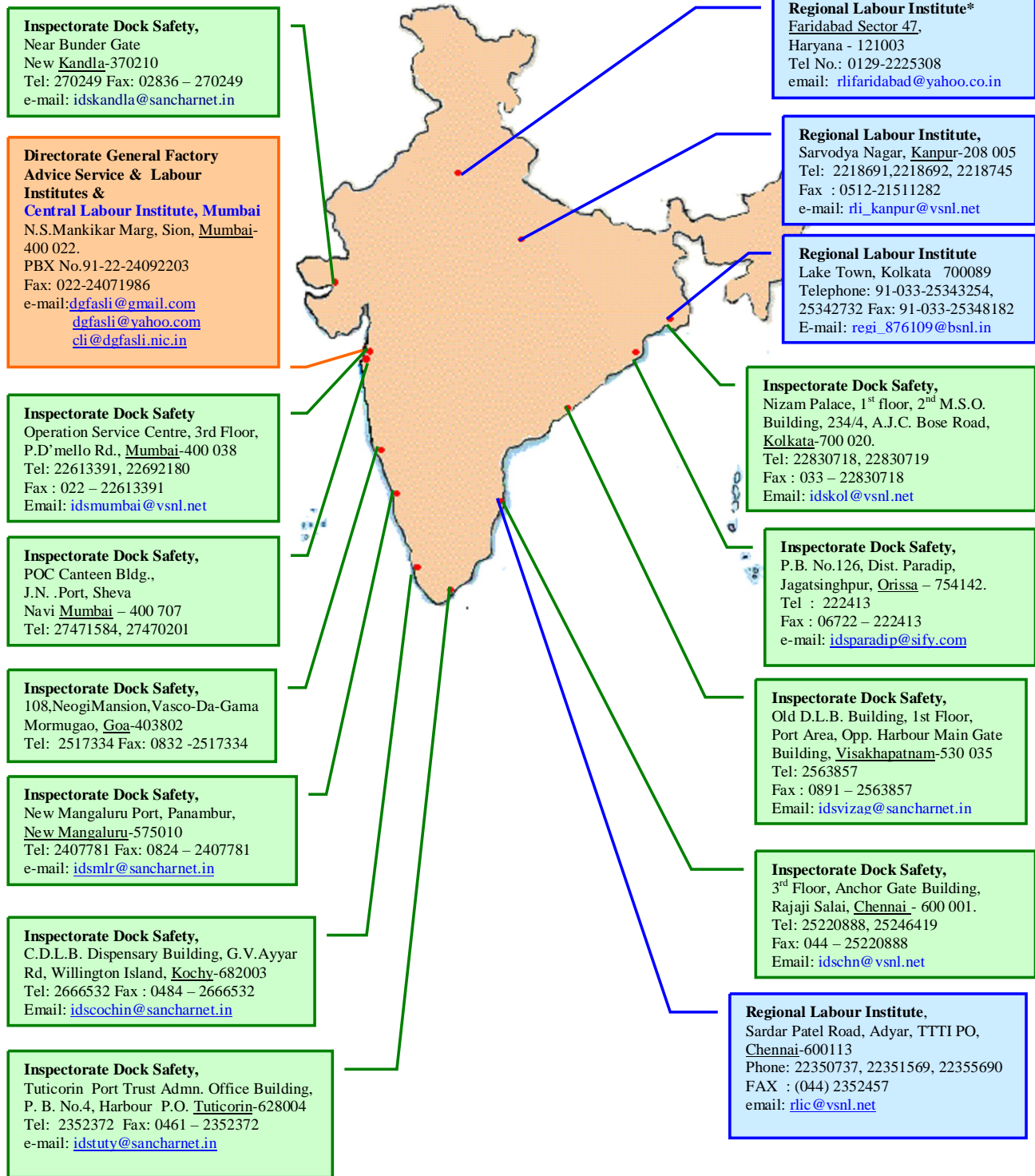
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S.No	Title of the Programme	Period	Coordinator
1.	Chemical Hazards and their Management at Workplace.	July 21-23	M.R.Rajput
2.	One Year Post Diploma in Industrial Safety (PDIS)	July 2010 – April 2011	Dr. Avneesh Singh
3.	Behavioral Approach for Positive Safety Culture	August 18-20	Dr. Avneesh Singh
4.	Management of Safety Health and Environment at Workplace	September 6-7	Rajeev Shukla
5.	Physical Hazards and their Management at workplace	October 20-22	S.M.Chaugule
6.	Occupational Safety and Health in Construction Industry	November 24-26	Rajeev Shukla

- Training programme brochures will be mailed sufficiently in advance, specifying the dates of commencement of course, its venue etc., to the organisations as per mailing list available.
- Course-coordinator may be contacted for details such as training programme dates, venue, programme contents, level of participants, 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 course-coordinator.
- Limited Hostel Accommodation on sharing and chargeable basis will be available on 'First-Come-First-Served' basis.

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