

INDOSHNEWS

Vol.17 No3, July- September 2012

Published by

Directorate General Factory Advice Service & Labour
Institutes, N.S. Mankiker Marg. Sion, Mumbai 400 022.
INDIA

Editor-in-Chief

Shri S.B.Mathur

Executive Editor

Shri S.N.Borkar

Assistant Editors

Shri T.K. Biswas, Shri Sumit Roy

Editorial Board Members

Dr.R.B. Raidas; Dr.A.Singh;

Shri K.Rustogi; Shri U.K. Das; Shri S. Bharathi;

Dr. R.K.Elangovan; Dr. S.K.Haldar;

Dr. Brij Mohan

Judgements made, opinions expressed by the authors in the Newsletter do not necessarily reflect the views of DGFASLI.

CONTENTS

ARTICLE: Industrial Hygiene Practices for the Improvement.....	1
ARTICLE: Challenges of Preservation of Rare Books, manuscripts and other Materials.....	6
INSTITUTE NEWS	9
ABSTRACTS	12
MATERIAL SAFETY DATA SHEET.....	14
TRAINING CALENDER: DGFASLI	15

Visit us at : www.dgfasli.nic.in

Telephone : PABX 91-22-24092203

Fax : 91-22-24071986

ANNUAL SUBSCRIPTION

Rs. 100 (India)

Rs. 200 (Foreign)

The electronic version of the **INDOSHNEWS** on the Internet can be accessed on www.dgfasli.nic.in



मेरी कलम से

इंडोशयूज के इस अंक को पाठकों के सामने प्रस्तुत करने में मुझे बेहद खुशी है। इंडोशयूज का प्रत्येक अंक कार्यस्थल में व्यावसायिक सुरक्षा एवं स्वास्थ्य के कुशल प्रबंधन से संबंधित किसी

विशेष समस्या अथवा वर्तमान मामलों पर जोर डालता है।

औद्योगिकरण, जो कि किसी भी अर्थव्यवस्था की रीढ़ है, में तीव्र गति से वृद्धि हुई है अर्थव्यवस्था में त्वरित वृद्धि का कारण नई प्रौद्योगिकी खोज है। ये नई और जटिल प्रौद्योगिकियाँ अपने साथ नए प्रकार के जोखिम/रसायनिक प्रक्रियाएँ लाती हैं और उत्पादन शैली में परिवर्तन उत्पन्न करती हैं। इस प्रकार के जोखिम देश में लाखों कामगारों के लिए जान का खतरा उत्पन्न करते हैं। अतः इन जोखिमों से उत्पन्न खतरों को प्रौद्योगिकी के प्रारंभिक स्तर में ही रोकना चाहिए। व्यावसायिक सुरक्षा एवं स्वास्थ्य प्रबंधन में हमारा यही प्रयास होना चाहिए कि हम इन प्रणालियों से उत्पन्न जोखिमों को पहचानें और उनका नियंत्रण करें।

इंडोशयूज के इस अंक में दो लेख हैं। खतरनाक औद्योगिक रसायनों की हैंडलिंग अथवा परिचालन से संबद्ध स्वास्थ्य समस्याएँ, कार्यस्थल में उनकी मौजूदगी की निगरानी और नियंत्रण के लिए रणनीति अपनाना पहले लेख की विशिष्टता है। दूसरा लेख दुर्लभ पुस्तकों, पांडुलिपियों एवं इस प्रकार की अन्य सामग्री के परिरक्षण की चुनौतियों पर प्रकाश डालता है। यह लेख डिजिटलाइजेशन की प्रक्रिया की जटिलताओं तथा इसके लाभ एवं सीमाओं के बारे में भी समझाता है। इन न्यूज पत्र को और अधिक मजबूत बनाने के लिए संपादकीय बोर्ड को पाठकों द्वारा भेजे गए बहुमूल्य सुझाव मिलते रहे हैं। आशा करता हूँ कि इंडोशयूज के इस अंक में प्रकाशित लेखों और अन्य सामग्रियों से प्राप्त जानकारी व्यावसायिक सुरक्षा और स्वास्थ्य वृत्तियों और अन्य पणधारियों के लिए लाभदायक सिद्ध होगी।

FROM THE DESK

It gives me immense pleasure to put before the readers, this issue of the INDOSHNEWS. Each issue of INDOSHNEWS puts emphasis on a particular problem or a current issue concerned with the efficient management of OS & H at workplace.

Industrialisation, being the backbone of any economy, has achieved a very high pace of growth rate. The inventions of newer technologies are aimed at accelerated growth of the economy. These new and complex technologies bring with them new hazards / chemicals, processes and involve changes in production methods. Such hazards associate with them, serious threats to the lives of millions of working population in the country. Hence these hazards have to be taken care of during the incipient stage of the technology itself. Our efforts in the OS & H management should be directed towards identifying such hazards which might have crept into the system and devising methods to contain them.

This issue of INDOSHNEWS contains two articles. The first article highlights the health problems associated with the handling or manipulation of hazardous industrial chemicals, monitoring their presence in the workplace and application of strategies to control them. The second article highlights the challenge of preserving rare books, manuscripts and other materials. It also explains the process of digitization its advantages and limitations.

The editorial board has been receiving valuable suggestions from the readers to strengthen the newsletter. I hope the information carried by the articles and other features of this issue of INDOSHNEWS will be very much useful for the OS & H professionals as well as other stakeholders.

S.B.Mathur

Director General & Editor- In -chief

INDUSTRIAL HYGIENE PRACTICES FOR THE IMPROVEMENT OF WORK ENVIRONMENT

P.B.Pal

ABSTRACT

Working community in industries is exposed to different types of hazards. These hazards adversely affect the health of the exposed persons. The application of industrial principles can bring about remarkable improvement at the work place. The hazards at the workplaces should be properly identified, evaluated periodically so that effective control measures can be devised to protect the health of the workmen. Health problem associated in the handling or manipulation of hazardous industrial chemicals such as Pesticides, Solvents, Epoxy Resins, Polyurethane foams and paints, Fluorocarbons & Dyestuffs are presented in the paper. Monitoring workplace air to evaluate the exposure of chemicals, Hierarchy of strategies to control chemicals and Use of Personal Protective Equipment are also highlighted in the paper. The paper highlights the different dimensions of Industrial hygiene with a view to encourage industries to adopt these practices for quantitative changes at the work places.

INTRODUCTION

There has been a considerable industrial growth in India since three decades. Industries like petroleum & petrochemicals, fertilizers, power generating plant etc have increased in manifold. It is a well known fact that modern technology has improved the quality & productivity in industries but at the same time has introduced several physical hazards such as heat stress, noise etc and chemical hazards in the form of particulates & gaseous form at the work place. The workers come across with these hazards during the work and on excessive exposure may impair their health and cause occupational diseases. As we are aware that most of the occupational diseases are not curable, we have to have preventive measures. Industrial Hygiene is a preventive measure for the prevention of occupational diseases. It is defined as science & art which deals with anticipation, recognition, evaluation & control of occupational health hazards in industrial work environment.

However, the adverse health effects on working community due to prolonged exposure of airborne chemicals at workplace may lead to chronic crippling health implications and occupational disease. Therefore industries should adopt good industrial hygiene practices for the prevention of occupational diseases. THIRD SCHEDULE under Section 89 of the Factories Act, 1948 has listed out 29 occupational diseases. It is the challenge for industrial management, industrial hygienists, occupational health professionals, safety professionals and government agencies to control the health hazards at

the workplace. The present paper highlights the salient features of the industrial hygiene practices particularly to control hazardous chemical at the work place. The application of the good industrial hygiene practices will not only protect the health of the employees but will also improve the working conditions. The hazards of the commonly used chemicals are also summarized for the benefit of the industry.

HARMFUL EFFECTS OF SOME OF THE COMMON HAZARDOUS CHEMICALS

Pesticides

All pesticides are toxic to life – that is their rationale. Their effects are not confined to 'pests' but are exerted in any life form exposed to them. They are biocides.

The health hazards of pesticides vary with their mode of formulation - as gas, solution or powder – and with the mode of application – as a spray, dust or powder. The solvent or dispersing agent is frequently just as harmful as the biocide, e.g. benzene or carbon tetrachloride. The gaseous form is typical of many of the fumigants, such as methyl bromide, used to fumigate ships' holds. The liquid form is assumed by many common pesticides, such as Parathion, Mevinphos and DEF. They can be inhaled if applied as a spray or mist. Solids like DDT or Lindane can be applied as a dust or as an aerosol. Some pesticides come as baits, such as Warfarin.

The principal classes of pesticides are:

Class	Examples	Health hazards
Organophosphorus insecticides	Azinphos-methyl (Gusathion), diazinon, dimethoate, ethion, maldison Malathion), mevinphos and parathion.	These biocides act by attaching themselves to the essential enzyme cholinesterase , thereby disrupting brain and nervous functions, and inducing muscle spasms and convulsions. Many organophosphorus insecticides are rapidly absorbed through the skin, and produce symptoms within half an hour. They can kill, even in small quantities. Repeated skin contact and inhalation may progressively increase the susceptibility of poisoning without showing earlier symptoms.
Organochloride insecticides	Aldrin, BHC-(Gammexane), campechlor (Toxaphene), Chlordane, DDT, dieldrin, endosulphan (Thiodan, Endoson), endrin, heptachlor	The greatest occupational hazard is absorption through the skin. Inhalation is also a problem. Whatever the route of absorption, the organochlorines act on the central nervous system, producing convulsions and coma

Carbamates	(Marlate). Aldicarb (Temik), aminocarb (Metacil), aprocarb (Baygon), bendiocarb (Ficam), carbaryl (Sevin)	Symptoms of acute over exposure include watering of eyes, irritation of skin, headache, nausea, blurring of vision, progressing to dizziness, weakness, chest tightness, cramps. If these symptoms are left untreated, death may result. Carbamates are also cholinesterase inhibitors.
Phenoxy herbicides acid	2,4D (Weedar), 2,4,5-T (Weedone, Butoxone, Trimex), fenoprop (kuron, Silvex), MCPA (Mehtoxone, Methone, Methex), MCPB (Tropotox).	This group are of concern because of their long-term serious effects. The herbicides 2, 4, 5-T and 2,4-D are known to cause cancer, and 2, 4,5-T birth deformities.
Dinitrophenol compounds	Dinoseb (Nocweed, premerge, DNBP), DNOC, dinitramine (Cobex), pendimethalin (Stomp), trifluralin (Treflan)	These compounds are rapidly absorbed and are highly toxic. Symptoms of acute over-exposure include night sweating, sleeplessness and thirst. A dose of 1 to 3 grams taken by mouth is fatal.
Substituted herbicides urea	Chloroxuron - (Tenoran), diuron (Karmex, Diurex), Fenuron (Dybar), linuron (Afolon, Lorox), monuron (Telvar).	These compounds have a relatively low solubility in water and are not readily absorbed. Mildly toxic with short-term exposure.
Triazine herbicides	Atrazine (Gesaprim, primatorl, Atradex, Nutrazine), desmetryne (Semeron) propazine (Gesamil), simazine (Gesatop, Simadex).	These are relatively non toxic
Trichloro group	2,3,6-trichlorobenzoic acid (Trysben), trichloroacetic acid (Socium TCA), picloram (Tordon)	These are irritating to the skin and eyes. Picloram is combustible.
Cyclohexenes etc.	Captan (Orthocide), folpet (Phaltan), 22-DPA (Dowpon, Dalapon)	Mild short-term toxicity. Captan has been shown to cause birth deformities in test animals.
Dipyridyllium group	Diquat (Reglone, paraquat (Gramoxone, Weedex.	These are highly toxic. Cases of severe poisoning amongst applicators are regularly reported in the literature.
Inorganic compounds	Arsenites, copper sulphade	These can be toxic and can also cause chemical burns. The arsenicals, formerly use widely on vineyards, are known to cause cancer. They are still widely used in the timber preserving industry.
Chlorophenols	Trichlorophenol, pentachloro phenol (Penta, PCP)	PCP is usually contaminated with a dioxin that can cause cancer and birth deformities.

Solvents

Solvents are used widely throughout industry, in such processes as metal degreasers, paint thinners, glues and adhesives, on printing presses, in spray painting booths and in dry cleaning.

Some of the common solvents are:

- Alcohols - Methanol, ethanol, isopropyl;
- aromatic hydrocarbons - Benzene, toluene, xylene, nitrobenzene
- chlorinated hydrocarbons - Carbon tetrachloride, chloroform, trichloro-ethylene (Trike), perchloroethylene (Perk, perkylene), ethylene dichloride, trichloroethane (Genklene).
- ketones - Acetone, methyl ethyl ketone (MEK), ethyl butyl ketone (EBK), methyl butyl ketone (MBK)
- ethers - Ethyl ether, isopropyl ether;
- esters - Ethyl formate, amyl acetate;

- glycols - Ethylene glycol, Ethylene glycol Monomethyl ether, ethylene glycol monoethyl ether, methyl cellosolve (Dowanol), butyl cellosolve.

Solvents are used because of their dissolving power. Unlike water, solvents can dissolve oil, grease, paint etc., and they can be used as a vehicle for dyestuff in inks and paints. Solvents are easily absorbed by the body, by breathing solvent fumes, and by absorption through the skin. Most solvents are narcotics, i.e. they have an immediate depressing effect on the central nervous system, causing faintness, dizziness, then unconsciousness and finally death - all within minutes in some cases.

Solvents dissolve the oil in skin, so regular skin contact almost always causes dermatitis. Dryness, cracking and blistering, and frequently infection, result. The long-term effects of solvents include damage to the liver, causing a

form of cirrhosis which is identical to that caused by alcohol. Solvents such as trichloroethylene, perchloroethylene, dichloroethane (ethylenedichloride), carbon tetrachloride and chloroform have all been shown to cause cancer in animals. The solvent benzene has long been to cause leukaemia or cancer of the blood.

Genetic toxicity (mutagenicity) has been demonstrated for benzene, styrene, trichloroethylene and some of the chlorinated ethanes. Chromosome changes have been noted in workers exposed to benzene, benzene-toluene mixture, trichloroethylene and styrene.

Foetal damage and spontaneous abortions are suspected to be related to exposure to solvents. Benzene, for example, has recently been shown to cause foetal damage in animals.

The only acceptable strategy for the control of solvents in the workplace is substitution, or total enclosure, or extremely efficient exhaust ventilation.

Epoxy Resins

Epoxy resins are industrial adhesives which come as "two pack systems" – the resin and the hardener. The two are applied separately, and the hardener 'cures' the resin. There are hundreds of different chemicals in the different epoxy resins. Some of the trade products are Araldite adhesive, Scotch cast resin, Devcon A, F2 and WR, Dulux Durepon Chromate – Primer, Resiweld epoxy resin, Epirez epoxy resin and Repco-Woodhill epoxy.

Epoxies are used throughout industry, in aircraft, ship and car manufacture, electrical industries, plastic industries and many more. These resins are found to be extremely useful throughout industry – but they have also been found to cause severe dermatitis – irritation and sensitisation of the skin. Once you are sensitized, the slightest exposure to one of the chemicals in the resin or hardener can provoke an extremely painful skin reaction. All measures should be provided to avoid skin contact. All mixing of the resin and hardener should be mechanical, and enclosed or provided with exhaust ventilation.

Disposal of epoxies is especially hazardous. Uncured or partially uncured wastes should be stored under water until they are collected. They may only be disposed of in approved tips or chemical waste facilities. These materials should not be burned as they are known to produce fumes of hydrochloric acid and ammonia.

Polyurethane foams and paints

Polyurethanes are another of those chemical products which have extremely useful hardening properties. Flexible polyurethane foam is widely used in the furniture industry, as the filler in upholstery and bedding. Individual moulded articles are used, for example in car seats. Flexible foam is also flame-boned to fabrics and used widely in the textile industry. Rigid polyurethane foam is widely used as a container material (e.g. the white packing that comes around TV sets and other appliances) and it is used as an insulating material in the refrigeration industry. Polyurethane paints are used in

the motor industry and as marine coatings; they harden as moisture in the air reacts with the active ingredient in the paint.

This active ingredient is an isocyanate. Isocyanates come in many chemicals forms, Toluene di-isocyanate (TDI) and 4, 4-diphenylmethane di-isocyanate (MDI) are prominent.

Trade names under which TDI is supplied include Hylene, Adiprene etc. (Du Pont), Desmodur etc. (Bayer), Suprasec etc. (ICI), Linene, Ekanate etc. (Ugine Kuhlmann), Flexocel, Castomer, Clole etc. (Baxenden), Quazilan, Isocon etc. (Lankro), Caradate etc. (Shell) and Isonate etc. (Upjohn).

The isocyanates are extremely reactive (which is the basis for their industrial use) – but they are also biologically active.

Isocyanates are lung sensitizers

Both TDI and MDI can produce crippling occupational asthma – and in some severe cases, death. Once someone is sensitized to an isocyanate, the slightest exposure can bring a crippling attack of asthma.

Yet another hazard in the manufacture of polyurethanes is the use of particular catalyst, called 'Niax catalyst – C125'. Evidence has come to light of a high level of bladder malfunction accompanied by severe pain when attempting to urinate and associated kidney problems, amongst workers at two US companies manufacturing PU foam. In one of the studies, no less than 69 out of the 101 workers in the plant were found to have bladder disorders. This catalyst was the subject of an International Hazard Alert put out through the International Labour Organisation.

Polyurethane foams burn very easily and give off thick clouds of choking black fumes. It is these fumes which now pose the greatest threat in house fires and fires in furniture stores, and they have been responsible for many deaths in such fires.

Fluorocarbons

Fluorocarbons are widely used today as refrigerant gases and aerosols for use in spray cans. Fluorocarbons have been promoted by Du Pont under the trade name **Freon**. Some of these products are Freon 14 carbon tetra fluoride, Freon 23 carbon trifluoride & Freon 22 chlorodifluoromethane. Freon 22 is a particularly toxic material. It has been found to be positive in the Ames test for mutagenicity (i.e. it is genetically toxic) and must therefore be suspected of causing cancer. It has also been found to cause birth abnormalities when pregnant rats were exposed to it, in tests conducted at Du Pont's Haskell Laboratories in the US, according to documentation issued by Du Pont. The major refrigerants are Freon 11, 12, 13 and 22. The main propellants used in spray cans are Freon 12, 11, 114 and 115.

Dyestuffs

The model chemical industry really started with the development of synthetic dyes from coal tar in the mid-

nineteenth century – and the chemicals used in the production of dyes have been killing and adversely affecting workers ever since.

Virtually all dyestuffs are produced synthetically from such starting materials as benzene, toluene, benzidine, naphthalene and anthracene, derived from coal tar but not almost exclusively from petroleum. Dyestuffs can be classified according to their basic chemical composition. Most are based on a few chemical groups, such as nitroso, nitro, azo, stilbene, quinoline, benzidine, thiazine, anthraquinone etc., or on organic heavy metals as in mercuric dyes.

The US Occupational Safety and Health Administration and the National Institute of Occupational Safety and Health issued a Health Hazard Alert in December 1980 on dyestuffs based on benzidine, ortho-tolidine and ortho-dianisidine. This Alert was based on evidence that the dyestuffs cause cancer. The Alert stated: "Available studies indicate that some benzidine-based dyes cause cancer in experimental animals and are converted in animals and humans to benzidine" (Benzidine is a known cause of cancer of the bladder) "NIOSH has recommended that the commercial use of benzidine based dyes be discontinued and appropriate substitutes be utilized. OSHA has concluded that exposure of workers to the dyes should be reduced to the lowest feasible levels"

EVALUATION OF WORK PLACE ENVIRONMENT

The hazards should be recognized after due consideration of process /operations, uses of chemicals, work practices, existing control measures including personal protective equipment. Once hazards are identified then evaluation of work environment becomes an important decision point for the degree of control required on particular work area. Therefore the monitoring of work environment is one of the decision making steps in the application of industrial hygiene.

Air monitoring is done in several different ways. There is fixed point monitoring, where a sensor, or collecting device, is placed in a permanent position in the workplace, and takes samples of workplace air continuously or at regular intervals. These samples are normally analysed in a laboratory. If sampling points are strategically located, continuous fixed point monitoring, particularly if performed in real time (i.e. so that you can read the concentration of contaminant as it is collected) is the air monitoring procedure of choice. It is performed, for example, in the chemical industry, particularly for the monitoring of vinyl chloride monomer in plants producing PVC.

Less sophisticated is the procedure of taking grab samples from the air with a portable instrument. The most common and versatile instrument used for this purpose is the Dragger tube system. In this system, a small hand pump is used to draw a known volume of workplace air through a glass tube of test chemical. The extent of discolouration of the test chemical indicates the amount of pollution present. The discolouration extends down the tube which is calibrated in parts per

million of contaminant. This system gives only a rough and ready guide to pollution levels – but frequently this is all that is required. You have to know what pollutants you are looking for, in order to be able to choose the right test chemical.

Finally, there is personal sampling, which involves an individual wearing either a badge (passive monitoring) or a charcoal tube and a small pump (active monitoring). In either case, the badge or tube is worn for complete shift, and then returned to a laboratory for analysis. The contaminant collected by the badge or tube is an indication of the amount of contaminant that also got into your lungs over the same period. Wearing of charcoal tubes and pumps can be a nuisance, and so this form of monitoring should only be contemplated as a means of checking the relevance of fixed point monitoring or grab sampling. Badges are simpler to wear, but independent audit of their performance reveals that they can be widely inaccurate, and so cannot be relied upon as yet. In general, personal monitoring should be seen as complementary to fixed point monitoring – neither is a substitute for the other.

Some points to note in any air monitoring programme:

- Are the tester's trained industrial hygienists?
- Are the samples being taken at the right place, i.e. near the breathing zone of operators?
- Is the sample being taken at the right time, i.e. when pollution levels are highest?
- Are all contaminants being measured?
- Are the test results being made available to safety committees and management regularly, and discussed?

HIERARCHY OF STRATEGIES TO CONTROL CHEMICALS

Risks from working with chemicals can be reduced in a number of ways, and according to the principle given above (that the workplace should be made to fit the worker, and not the worker to the workplace) some way should be given priority over others. Indeed there is a hierarchy of strategies, starting with the top priority (or 'first line' of defence) and down to the lowest priority (or 'last line' of defence). The hierarchy is three-fold.

1. Substitution for less hazardous material.
2. Total enclosure or ventilation, backed by environmental monitoring.
3. Administrative procedures or use of protective equipment, backed by medical monitoring.

Use of Personal Protective Equipment

'Enclosure' puts a barrier around the process to prevent contamination of the workplace air; protective clothing puts the barrier on the worker himself or herself.

Personal Protective Equipment for chemical hazards includes:

- face masks
- respirators
- gloves

- plastic overalls
- goggles
- airline-fed helmets

Employees should be warned that Personal Protective Equipment can sometimes lead to a false sense of security. The US National Institute of Occupational Safety and Health (NIOSH) recently carried out a survey on gloves that were commonly marketed as a defence against common solvents like trichloroethylene, xylene and toluene – and found that most of the common commercial gloves were completely ineffective in stopping the solvents penetrating the skin of operators' hands.

The Personal Protective Equipment must be personally fitted and issued; otherwise there will be no effective protective barriers around workers who differ in some way from the norm.

- Personal Protective Equipment must be inspected, cleaned and maintained by management and replaced as necessary. Items should be replaced immediately when damaged or lost.
- Great care must be taken with respirators. They must be personally fitted and chosen to suit the workplace conditions. A filter designed to stop dust, for example, will be ineffective against chemical fumes. Canister and cartridge respirators contain chemicals designed to neutralize particular vapours and fumes – so it is essential to ensure that each type of protection against contaminant encountered in the workplace is by means of the appropriate canister. Particular attention needs to be given to the maintenance of airline fed helmets and masks, because failure of these can result in rapid death. Respirators remain active only for a certain period.
- No worker should be charged for any item of Personal Protective Equipment.
- No worker should be required to clean or in any other way maintain Personal Protective Equipment; it is the responsibility of the management.

REFERENCES

1. The Factories Act, 1948.
2. George S. Benjamin & Maureen A. Kerwin, Fundamentals of Industrial Hygiene, 1988. NSC, Chicago.
3. ILO, Encyclopaedia of Occupational Health & Safety, 4th Ed. 1998, Geneva, USA.
4. Patty's Industrial Hygiene & Toxicology, Third Revised Edition, Edited by George D. Clayton & Florence E. Clayton, USA.
5. Hervey B. Elkins. The Chemistry of Industrial Toxicology, 1950 USA.

Shri P.B.Pal
Director (Industrial Hygiene)
Central Labour Institute
Sion, Mumbai-400022

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 Centers.

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

EXCERPT FROM CIS DOC

TITLE: Global estimates of traditional occupational risks.

CIS ACCESSION NUMBER: 07-766

This study used employment figures, reported fatal accident rates and mortality data on various diseases and injuries together with literature data to compute the rates of occupational accidents and diseases for several countries worldwide.

It was estimated that an average of 2.2 million fatalities due to work-related factors occurred worldwide annually. The most significant problems identified were work-related cancer (in particular in industrialized countries), occupational accidents (in rapidly industrializing countries), work-related cardiovascular diseases, work-related communicable diseases (in tropical developing countries) and work-related lung diseases in countries where mining is a major activity.

It is estimated that 270 million nonfatal occupational accidents and 160 million work-related diseases occur worldwide every year.

CHALLENGES OF PRESERVATION OF RARE BOOKS, MANUSCRIPTS AND OTHER MATERIAL IN DIGITAL ENVIRONMENT

SANTOSH TYAGI

ABSTRACT

In this article, I have tried to discuss the challenges of preservation of rare books, manuscripts and other material in Digital environment. The need for digitization, the process of digitization, its advantages and disadvantages with reference to its usefulness worldwide. The cost involved in acquiring the digital equipment and hiring of technical personnel for their operation will be initially high but if we compare the utility, saving of storage space and hiring of manpower, the cost can be set aside. Moreover, we have to coordinate with users worldwide for exchange of heritage and information.

INTRODUCTION

The process of preservation ensures that the rare books, manuscripts and other material held by a library do not get destroyed and are kept safe from the enemies of records. The primary goal of a library is to provide access to its holdings. In order to achieve the above goal, the libraries are required to evolve a systematic preservation planning as without a systematic preservation policy and its systematic implementation, the records, rare books and other material collected get destroyed.

Rare books, manuscripts & archival records are unique because replacement of their information may be impossible, difficult to carry out, or exceedingly expensive. Therefore, their preservation becomes key issue before the management to ensure their safety and preservation. For this purpose they are to identify the enemies of the records, rare books and manuscripts and employ a series of methods for preventive, curative, restorative, duplicative conservation.

NEED FOR DIGITIZATION:

The rapid technological advancement has made it more or less imminent for digitization of rare books and manuscripts as it will be very difficult and time consuming to retrieve the information from paper heritage. Therefore, the digitization of documents is fast emerging as an important tool for solving difficulties of retrieval in so far as consultation and dissemination of information incorporated in documents are concerned, under the process of digitization the images on rare books and manuscripts are transformed into electronic format, which can be shared by a large number of users throughout the world simultaneously, thereby making the information available to users globally. The process of digitization starts right from the stage of converting the information contained in a document into digital form and store electronically. The second step is to ensure that the information so stored digitally is retrieved. The information in digital library are stored in Blue ray optical disc, etc, storage media such as floppy disc, CD Rom, DVD Rom, VCD Video and sound, data graphics etc.

SCOPE AND OBJECTIVE OF DIGITALIZATION

"The process of digitization of documents is a costly process. It requires costly machines for digitization of documents and trained personnel for handling them. A slight mistake can destroy the whole process. The main objectives of the digitization are as follows:

1. To provide personalized and retrospective services in efficient manner
2. To capture stored, manipulated and distributed information.
3. To make available all publications timely and easily.
4. To have large number of data base in CD.
5. To serve widely dispersed communities through the network.
6. To save time of library professionals, archivists and museum curators and conservators.
7. To reduce dependence on handling fragile and brittle documents besides original documents.
8. To ensure and obtain a back up medium/copy

GENERATION OF DIGITIZATION RECORDS

Digitization is the translation of analog text, sound or images into digital format and results in the creation of digital surrogates containing similar information as the original. This differs from objects born in digital format. Digital collections are in a format which could be delivered electronically anywhere and anytime, they can be viewed at the size and resolution necessary for the particular task, they can be down loaded and saved for later use and have the potential to be viewed or used simultaneously.

Text or images, typically printed, manuscript or graphic works on traditional substrates such as paper or parchment, can be digitized by the use of optical scanners or digital photography. In the case of optical scanners, the document is placed in or on the scanner and the scanner translates the image into digital code. Scanners could be used to scan text in two different ways: the text can be scanned as an image; or it can be scanned using optical character recognition (OCR) software to save it as a text file. OCR software digitizes text as alphanumeric characters, which can be further edited by word processing software programmes. The second option scans the text and saves it as an image where characters are treated as areas of light, shade or colour. Manipulation of the resulting image file is performed only through graphics or illustration software (such as 'Adobe Photoshop') and text editing is not possible. Digitization by camera similarly captures information as an image, not as text.

a. Born Digital

For a record to be 'born' digital format, it is to be created by a computer system. Digital technology has brought

forth many significant advantages to users in many fields. The interest of the creator of the digital documents in the computer is not necessarily long term preservation or access to the information. Other experts see quite a different set of advantages and disadvantages associated with digital technologies than do the creator. The disadvantages of digital media and technology, and the challenges they present to heritage institutions, are related to the long term preservation. Another important characteristic of digital electronic records is their logical format. Bits and bytes cannot represent real-world things without application of additional means through which this code could be rendered accessible and understandable as informational content. Computer software programmes provide the means to organize and package data into logical formats programmed to represent information in specific ways. Logical formats are usually proprietary to their creators (software companies) and more often not completely compatible with software programmes other than that in which they were originally created.

b. Electronic Textual records

Electronic textual records include all types of documents created by computer systems (typically word processing software) that would have previously created through various printing or manuscript techniques (e.g. typewriter, adding machines, letterpress, handwriting, etc). Digital textual records are produced by computer authoring systems in a variety of logical formats (usually proprietary), and on various media (e.g. magnetic tape or disk, optical media, computer memory chips) common proprietary formats include, Corel, World perfect or Microsoft word. Non-proprietary or "Open" file formats include, the ASCII format, the Adobe PDF format and markup language formats used for exchange over the internet (e.g. HTML, XML).

c. Databases and Spreadsheets

These records are created as tables or indexed collections of data (numeric or alphanumeric) image by software programmes. As with textual records they typically exist in collections as digital files in proprietary or non-proprietary formats on magnetic or optical medium. The adoption of digitization as a preservation copying strategy is also pitted against formidable and well established traditions. The standard format preservation for microfilming and photography as set this medium with long term potential. Recent technical expert still support microfilming as the preservation reformatting option of choice for analog originals.

d. Migration

Migration ensures the period transfer of digital information from one software/hardware configuration to another available medium in vogue, or from one generation of computer technology to a subsequent generation of information technology. If there is a potential for loss of valuable information during migration then institutions would have to determine what would be a total acceptable quantum of loss (risk management) with the primary goal of access in mind, which should be to kept as watchword or an evolution of a definite policy to be evolved.

ADVANTAGES

The main advantage of digitization is to access up to date current information on all subjects without moving from their place of work

- All government rules and regulations, current policies on any matter are stored in one domain. If necessary, the user can make a hard copy of the information for reference.
- The rare books, manuscripts and other brittle records of archival value are not destroyed by frequent uses.
- This also helps in saving of storage space for other material.
- With intensive use of internet worldwide the information contained in rare documents reaches to larger number of users.

DISADVANTAGES

- Digital information can be manipulated by using computer devices.
- The website can be hacked by anyone to their advantage

CHALLENGES

Conventional preservation policy in libraries are primarily confined to the management and upkeep of records, rare books, manuscripts and other materials received in paper form etc. and dissemination of information to scholars and other users through traditional methods i.e. xerox, copies, publications, microfilms, microfiche, etc. The preservation methods adopted by the libraries are also traditional. Now with the change in the environment since 80's the government departments and other organizations have started maintaining records in digital form. It has therefore become necessary for the libraries to acquaint themselves about the rules and regulations for the maintenance and use of digital documents. All departments are therefore to formulate a specific preservation policy and provide suitable training to the staff connected with changes in the preservation policy is therefore need of the hour for survival of data for future generations.

Besides digitization of information the documents in their physical form are also required to be maintained as digital information cannot be used as evidence, it can only serve as a source of information. The information generally available in digital form on the website is taken for guidance and considered to be accurate but due to the frequent changes in policies and timely not updating the information on website makes a difference. The staff concerned in all the departments is therefore required to ensure that as and when a change in the information occurs, it must be simultaneously updated on the website. It is often seen that the web-sites are not updated for months together. This, therefore, goes without saying that any user accessing the information on web-site cannot depend on it unless verified by the original documents.

CONCLUSION

After going through various aspects of digitization, as brought out above, it can be easily understood that the process is enough cumbersome but very useful. We have seen spectacular rise in the users of internet worldwide. The desired information can be accessed by the users in any part of the world without moving out from their desk.

The digitization of course is a costly process but to extent it is useful to the users, the organizations can make arrangements for necessary funds required, as in the longer terms the organization would be saving money on deployment of staff and creation of more storage facilities. Therefore, it has become more or less essential for all organizations to go for digitization of all rare books, manuscripts and other records, once the revolution of digitization pick up, its benefits will be felt more and more in monetary as well as utility terms.

REFERENCES

1. Mani, N.S. " Electronic Records in Archives – A Challenge for Preservation pp. 3-4
2. Mani, N.S. " Recent Trades in the Digitalization of Records " pp 2-4
3. National Research Council, Washington (1986)
4. Paul, N.Banks (2006) "Preservation: issues and planning" pp 43-45
5. Prajapati, C.L (1994) "Recent Trends in Conservation of Documents" – The Indian Archives 39th meeting, Shimla PP. 45-52
6. Prajapati, C.L.(2005) "Conservation of Documents: Problems and Solutions, Mittal Pub. PP-3-4, PP. 89-90, 122P
7. Tyagi, S. "Conservation/Preservation of Archival/Library material: Library vision, 2020 profession and education; C.G.L.A. (2009) PP. 63-69

Dr. Santosh Tyagi
Assistant Library & Information Officer
National Archives of India
New Delhi

INDOSHNET

Ministry of Labour & Employment Governemnt 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 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 services. DGFASLI invites industrial organizations, institutions, industry associations, trade unions, professional bodies and non-governmental organizations having information on OS&H and willing to share the same with orders at the national and international level to participate as members of the network. Interested agencies may please wirt for proforma of organizational profile to **The Director General, DGFASLI, Central Labour Institute, N.S.Mankiker Marg, Sion, Mumbai 400022** or
E-mail at editorindosh10@gmail.com.

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.

SAFETY QUOTES

"Don't learn safety by accident!"

"Don't lose your head to gain a minute!"

"Every accident - every - time if it's predictable it's preventable!"

"Falling objects can be brutal if you don't protect your noodle."

"Safety's intention is accident prevention."

CENTRAL LABOUR INSTITUTE: MUMBAI

During the third quarter from July-September 2012, Central Labour Institute carried out several activities of which important ones are given below.



Studies/Surveys

Ergonomic study at Capsule Manufacturing Industry in Maharashtra (Chandra, S, Environmental Engineering Division)

Noise level study at Capsule Manufacturing Industry in Maharashtra. (Chandra, S, Environmental Engineering Division)

Safety Audit at a Thermal Power Station Plant in Maharashtra (Bharathi, S, Safety Division Mumbai)

Safety Audit at a Automobiles industry in Maharashtra. (Sushil Kumar, Safety Division)

Assessment of Work place Environment at a Cigarette manufacturing unit in Maharashtra. (Sree Ramulu, A.Industrial Hygiene Division,)

Assessment of work place Environment at Paints, Dyes & Polymer manufacturing industries in Karnataka. (A Sree Ramulu, Industrial Hygiene Division,)

Assessment of work place Environment at chemical manufacturing industry in Maharashtra. (Sree Ramulu, A. Industrial Hygiene Division,)

Assessment of work place Environment at Polymer manufacturing industry in Gujarat. (Sree Ramulu, A Industrial Hygiene Division,)

Training Programme

The Industrial Hygiene Division conducted three-days training programme on *Recognition and Evaluation of Chemical Hazards at Work Place* from August 07 to 09, 2012. The training programme was attended by twenty four participants from eleven organizations.

The MH&CS Division conducted in-plant training programme on *Hazard Operability Studies (HAZOP) in Chemicals and Pesticide manufacturing industry in Maharashtra*. In the programme thirty members participated.

The MH&CS Division conducted three-days training programme on *Safety & Health Management in Process Industries* from July 25 to 27, 2012. The training

workshop was attended by nine participants from seven organizations.

Workshop/Seminar/Conference

The Staff Training & Productivity Division conducted three days training Work shop on "Motivation for Safety, Health and Productivity at Work Place" from September 18th to 20th, 2012. This workshop was attended by thirty three management/Supervisory, Trade Union people from four organizations.

The Staff Training & Productivity Division conducted one month specialized certificate course for supervisors working in hazardous process industries from August 27th to September 27th 2012. Fifteen participants attended this course from ten organizations.

REGIONAL LABOUR INSTITUTE, KANPUR

During the third quarter from July-September 2012, Regional Labour Institute carried out studies, training programmes etc. which are described here.



Studies/Surveys

Industrial Hygiene Survey at Petroleum Industry in Uttar Pradesh (Brij Mohan, Industrial Hygiene Division)

Survey of Occupational Safety & Health System in the Industries of the State of Sikkim (Brij Mohan & A.K.Chakraborty Industrial Hygiene & Safety Division)

Training Programmes

The Institute conducted three-days training programme on *Chemical Safety for the Worker Members of Safety Committee* from July 10 to 12, 2012. Thirteen participants representing five organizations attended the programme.

The Institute conducted five-days training programme for Executives/Supervisors on *Testing & Examination of Lifting M/c & Pressure Vessel* from August 27 to 31, 2012. Twenty six participants representing thirteen organizations attended the programme.

The Institute conducted three-days training programme for Para Medical Staff on *Occupational Health for Para Medical Staff* was conducted from September 12 to 14, 2012. Eleven participants representing seven organizations attended the course.

The Institute conducted three-days training programme for Executives/Supervisors on *Safety & Law* was conducted from September, 25 to 27, 2012. Twenty four participants representing fifteen organizations participated the course.

Workshop/Seminar/Conference

The Institute conducted a one-day workshop on *Bilingual Use of Computer using of Unicode Encoding System* for the officers & staff of RLI Kanpur on July 27, 2012.

REGIONAL LABOUR INSTITUTE, CHENNAI

During the third quarter from July-September 2012 Regional Labour Institute carried out studies, training programmes etc. which are described below.



Studies/Surveys

Safety Audit at a heavy engineering plant in Tamilnadu (Balasubramanian, K., Safety Division, Mishra, S.B., Industrial Hygiene Division)

Noise Level Study at a Ordnance factory in Andhra Pradesh (Dhende, K.N., Industrial Hygiene Division)

Safety Audit at a Steel plant in Andhra Pradesh (Elangovan, R.K., Safety Division)

Environmental Study at a Rail Wheel Factory, in Karnataka (Mishra, S.B., Dhende, K.N., Industrial Hygiene Division)

Safety Audit at a Fertilizer Plant in Kerala (Elangovan, R.K., Safety Division)

Training Programme

The Institute conducted an in-plant training programme on *Safety in Material Handling and EOT Crane Operation* at Nuclear Power Project, Kudankulam, in Tirunelveli District on July 31, 2012. The programme was attended by twenty one participants

The Institute conducted three-days training programme on *Work Environment Monitoring in Hazardous Process Industries* from August 08 to 10, 2012. The programme was attended by seventeen participants.

The Institute conducted four-days training programme on *Major Accident hazards* from September 18 to 21, 2012. The programme was attended by ten Inspectors of Factories from various states.

Workshops/Seminars

The Institute conducted a national seminar on *Sensitizing the Faculties of Engineering and Polytechnic Colleges on Safety, Health and Environment* in association with K.S.Rengasamy College of Technology, Tiruchengode at Tiruchengode on August 27, 2012. The Seminar was

attended by one hundred and ten faculties of engineering and polytechnic colleges.

Paper/Presentations/Talks

Dr.R.K.Elangovan, Director (Safety), presented a paper on the *“Conclave Emerging Trends in Safety – Issues and Concerns in the National Odisha State Safety Conclave – 2012”* held at Bhubaneswar on September 14 and 15, 2012. The Conclave was attended by One Hundred & forty delegates

Dr.R.K.Elangovan, Director (Safety), delivered a key-note address on *“Conference Achieving Safety Excellence – A culture”* at the 11th Annual Greentech Fire, Safety and Security 2012”. Conference on July 12 and 13, 2012 organized by Greentech Foundation at Srinagar, in Jammu & Kashmir.

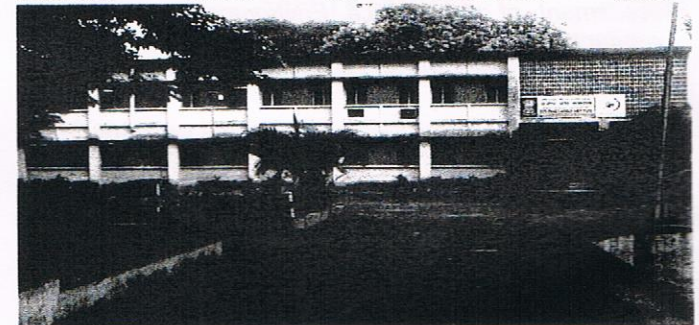
Dr.R.K.Elangovan, Director (Safety), delivered a talk on *National Policy on Safety, Health and Environment at workplaces and Emerging Trends in Occupational Health* at Panimalar Engineering College, Chennai on August 07, 2012 Four hundred delegates attended the programme.

Dr.R.K.Elangovan, Director (Safety), delivered a talk on *Sensitization Programme for the Stakeholders – Off Site Emergency Drill* in the training programme at Karaikal on August 10, 2012 for the District Govt. Officials of Govt. of Puducherry . Twenty five participants attended the programme.

Dr.R.K.Elangovan, Director (Safety), delivered a talk on *Occupational Health, Safety and Industrial Hygiene in the Effluent Treatment Plant – Legal Aspects* on August 18, 2012 at Padi in a training programme organized by TNPCB and Entrepreneurship Development Institute in collaboration with Tamilnadu Pollution Control Board, Govt. of Tamilnadu. The programme was attended by six hundred and ten delegates.

REGIONAL LABOUR INSTITUTE, KOLKATA

During the third quarter from July-September 2012, Regional Labour Institute carried out the following activities which are described here.



Training programmes

The Institute conducted five-day awareness training programme on *Safety, Health & Environment at Workplace* for Union representatives of Hindustan Aeronautics Ltd., Bangalore, from July 16 to 20, 2012. Eighteen trade union representatives attended the programme.

The Institute conducted five-days training programme on *Identification, Evaluation and Control of Hazards in Industries* for the Executives/Hygienist from August 20 to 24, 2012. Thirty five candidates attended the programme from thirty five organization.

The Institute conducted five-days training programme on *Chemical Safety for the Inspector of Factories* from August 27 to 31, 2012. Fourteen inspectors of Factories from six States attended the programme.

The Institute conducted five-days training programme on *Safety & Health Awareness programme for Members of Safety Committee for the Supervisors & Workers* from September 03 to 07, 2012. Fifty four candidates attended the programme.

The Institute conducted five-days training programme on *Safety Audit in Factories, Ports & Construction Industries* for the Executives/ Engineers/ Safety Officers from September 24 to 28, 2012. Twenty six candidates from eleven organisations attended the programme.

Paper/Presentation/Talks

Shri U. K. Das, Director (Safety), presented a paper on *Principles of Accident Prevention* at the two days *Workshop on Construction Safety for Construction Workers* on August 28, 2012 at State Labour Institute, Kolkata, West Bengal.

Shri U. K. Das, Director (Safety), presented a paper on *Safety Audit with Special Reference to Steel and Power Plants* at the National Seminar on *Zero Accident and total Safety in Steel And Power Industries of India* on September 28, 2012 at Multi-Disciplinary Centre on Safety, Health & Environment, Bhubaneswar, Odisha.

SAFETY QUOTES

"Shortcuts cut life short"

"Stop accidents before they stop you!"

"The best safety device is a safe worker"

"The chance taker is the accident maker."

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.

Visit us at: www.dgfasli.nic.in

Assessment of Work place Environment at a cigarette manufacturing unit in, Maharashtra. (Sree Ramulu, A Industrial Hygiene Division)

At the time of assessment, airborne samples of Tobacco dust were collected at Godown area, Lifting Section, Lamina Blending Section, Lamina Cutting Section, Steam Line, Ripping Section, Dust Sieving Area, etc. Total 24 number of air samples was collected at various locations. The levels of airborne concentration of Tobacco dust were found within their PLE's and TLV's at all locations. During the survey, it was observed that spillage of tobacco dust is found at their manufacturing process. It is suggested that spillage should be minimized and ensure that appropriate personal protective equipment (PPE) such as dust masks, safety shoes and hand gloves should be used by all the employees. All the employees of the factory should be educated in general awareness of health and safety at workplace.

Assessment of work place Environment at Paints, Dyes & Polymer manufacturing industries in

Karnataka. (Sree Ramulu, A Industrial Hygiene Division.) At work place Environment, airborne chemical contaminants were collected from Coating Plant, Dyes Plant, Dispersion Plant, Construction Chemical Plant and CED Plant. Evaluated the airborne solvent concentrations of Naphtha, Xylene, Butyl Acetate, Particulate Matter/Total Dust, Styrene, Sodium persulphate dust, Quartz silica, Phenol etc., at 20 locations of workplace environment. Total 95 numbers of air samples were collected. The levels of airborne concentration of all contaminants at all locations were found to be within their PLE's and TLVs except construction chemical plant. After observation it was suggested that Fresh Air Supply system and Efficient exhaust system should be provided at workplace environment. Regular Industrial Hygiene Monitoring of airborne contaminant in the plant should be continued in order to assess the efficiency and efficacy of control measures. Training for the awareness for the health hazards of quartz silica should be conducted for Employees. All employees should be trained to use appropriate personal protective equipment (PPE).

Assessment of work place Environment at chemical manufacturing industry in Maharashtra. (Sree Ramulu, A. Industrial Hygiene Division)

At work environment, air borne contaminated samples were collected and Evaluated for Ammonia, particulate matter & Adipic acid etc., at three locations. Total 15 numbers of air samples were collected. The levels of airborne concentration of Ammonia, particulate matter of Adipic acid were found within their PLE's and TLV's at all locations. It is suggested that the existing efficient exhaust system should be maintained and provide the training to the employees for awareness of personal protective equipment (PPE)

Assessment of work place Environment at Polymer manufacturing industry in Gujarat. (Sree Ramulu, A. Industrial Hygiene Division,)

At work environment, air borne contaminated samples were collected and evaluated to assessed the levels of Styrene, Ethyl Benzene at the service tank farm area,

process feeder area, rubber chopper area, rubber dissolver area, GFD121AGFA 601 area, styrene tank farm area, instrumentation laboratory, chemical laboratory & palletiser area. Total number of 76 samples were collected from 10 various locations. The levels of airborne concentration of Styrene and Ethyl Benzene were found within their PLE's and TLV's at all locations. It is recommended to maintain the existing control measures and provide training to the employees for awareness of occupational safety, health and hazards of chemicals. Procurement of personal protective equipment (PPE) as per BIS Standards.

Study of measuring breathing air quality of compressed air in the manufacturing of fire fighting and marine safety equipment units in Maharashtra & Kerala. (Sree Ramulu, A. Industrial Hygiene Division,)

The air quality testing is carried out in the Manufacturing of fire fighting and Marine Safety Equipment units in Maharashtra and Kerala states. Tested the compressed air which is to be filled in cylinders of SCBA sets for Marine use. The air quality is tested for CO, CO₂, Oil Mist, odour (smell), etc. of compressed air. Also measured the temperature and humidity at compressor area. All the parameters found within their limits as per BIS Standards. Further, all the manufacturers were suggested to maintain good housekeeping in the compressor area. The compressor should be placed in the fresh atmosphere free from dust, smoke and other air borne contaminants.

Safety Audit at a Thermal Power Station Plant in Maharashtra. (Bharathi, S. Safety Division)

The audit was conducted for identifying the areas for improvement and to meet the regulatory and non-regulatory requirements broadly in line with Occupational Safety & Health Audit BIS: 14489 and recommendations finalized.

The important recommendations of the audit were review of all existing policies, empowerment of safety officer to exercise his powers in respect of unsafe act / conditions, suggestions in the reporting system of safety department, effective use of accident statistics, review of appointment of contract workers, importance of comprehensive training policy, follow-up action on periodical medical examination results, medical examination before initial appointment, improvement on emergency control measures, system to avoid persisting irregularities, maintenance of statutory records, etc.

Safety Audit at Automobile Industry in Maharashtra, (Sushil Kumar, Safety Division,)

The audit was conducted in the main premises of the plant covering the entire manufacturing process broadly in line with BIS:14489 to cover the elements under the Occupational Safety & Health.

The important recommendations of the audit were empowerment of safety committee members for enhancing the efforts of the occupier, further regulation of HIRA, designing / updating of check-list / proforma, skill development training for FLT drivers, preparation of training policy, visit of medical officers to the operational areas, regular education and persuasion for use of PPEs,

ABSTRACT

Strengthening of existing work permit system, review of on-site emergency plan, proper storing of gas cylinders, maintenance of safety harness, etc.

The Ergonomic study at Capsule Manufacturing industry in Maharashtra (Chandra, S, Environmental Engineering Division)

The objective of the study was to identify and apply the ergonomics principles at different workstations and decrease the degree of mismatch between man, machine, equipment and working environment to suggest to ergonomics intervention whenever it is essential to enhance safety and productivity on the shop floor.

The Company is engaged in the manufacturing of capsule which is use in pharmaceutical industry. It is made up of gelatin which is prepared by animal bone extraction. Sixty three nos. of sample were taken randomly from all shop floors i.e. Production Hall no.1, 2 etc. The methodology adopted is measurement of different parameters effective man machine systems, strength profile measurement by using dynamometers, questionnaire and photography of desire locations. The observation was recorded in production area and result obtained is compared with the ideal work method adopted from the NIOSH, OSHA, RIBA, WISHA and RULA Standards, etc. As per the observation / findings the workers are phasing several musculoskeletal disorders such as back pain, shoulder pain, leg pain, etc. Several recommendations were given to improve working conditions in the shop floor.

The Noise level study at Capsule Manufacturing industry in Maharashtra (Chandra, S, Environmental Engineering Division)

The industry is engaged in the manufacturing capsules used in pharmaceutically industry. The study was carried out to measure noise in their production area. The main objective of the study was to identify the noise exposure in the shop floor and to suggest suitable control measures to reduce the noise level so as to minimize the degree of effect of noise induced hearing loss among the workers and others .The equipment i.e. sound level meter was used for recording sound levels at various frequency levels, the observation were recorded at 19 different locations. The study revealed that noise level near the selected locations was exceeding prescribed permissible limit values. It was found that high noise level in production Hall No. 1 & 2. The maximum Noise level was found to be 98.8 dB (A) Hall No. 1 and Hall No.2. The noise level was more than permissible limit i.e. 90 dB (A). The report contains 8nos.recommendations for minimizing noise level exposure and means of engineering control and effective use of PPE with a view to protect all workers/technicians/Engineers who are working near the noise prone area.

Industrial Hygiene Survey at Petroleum Industry in Utter Pradesh (Brij Mohan, Industrial Hygiene Division)

The study is carried out to assess airborne contaminants at work place & suggest measures to improve the working environment. During the study in a Petro chemical complex, GPU, GCU,LPG plant, LLDPE & HDPE plant were covered.Several recommendations were given to

the management for further improvement of safety &health at work place.

Safety Audit at a heavy engineering plant in Tamilnadu (Balasubramanian, K., Safety Division, Mishra, S.B., Industrial Hygiene Division)

Safety Audit was conducted with a view to identify the hazards so that the management can devise suitable procedures and methods for enhancing safety in the industry. The Safety Audit was conducted as per BIS: 14489:1998. At the end of the Safety Audit the findings were finalized. The study report and was sent to the management with several recommendations to improve the safety and health at work place.

Environmental Study at a Rail Wheel Factory, in Karnataka (Mishra, S.B., Dhende, K.N., Industrial Hygiene Division)

The factory is engaged in the production of wheel and axle assemblies for wagons, passenger coaches and locomotives with a production capacity of 200000 wheels and 100000 axles per year. Most of the processes are carried out at high temperature and high pressure that give rise to emission of airborne contaminants in various work areas. Process involves melting, grinding, gas cutting and welding. Samples of various airborne contaminants were collected and analysed using standard methodology as described in the Report. The results indicated that the concentration of some of the airborne contaminants i.e. Metallic dust, Siliceous dust, Graphite dust, Copper fumes, and Noise in some of the areas were found exceeding their PLEs / TLVs while concentration of other airborne contaminants e.g. Iron fumes, Manganese fumes and Carbon monoxide were found well below their respective PLEs. The Management has been striving to improve the work environmental conditions in order to fulfill the need of regulations and the challenges posed by Global market conditions.Certain remedial measures have been suggested to keep the PLE/TLV levels under control and further improve the work environment.

Safety Audit at a Fertilizer Plant in Kerala (Elangovan, R.K., Safety Division)

Safety Audit was conducted with a view to identify the hazards so that the management can devise and implement suitable programmes for enhancing safety in the industry. The Safety Audit was conducted as per BIS : 14489:1998. At the end of the Safety Audit, the findings were finalized. The major findings of the study pertains to Process Safety Management requirements for inherent safety, safe access, static electricity protection, electrical safety, MSDS, pipeline safety, colour coding, preparation of SOPs and SMPs, chemical safety, safety communication, safety in material handling, training, On-site and Off-site Emergency Planning, and effective implementation of the Safety Management System.

MATERIAL SAFETY DATA SHEET

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 Hydroquinone is given below.

PRODUCT NAME

Hydroquinone(31661)

Physical and chemical properties:

General Information

Form: Crystalline

Color: Light beige

Odor: Odorless

Change in condition

Melting point/Melting range: 172-173°C (342-343°F)

Boiling point/Boiling range: 285°C (545°F)

Sublimation temperature / start: Not determined

Flash point: 165°C (329°F)

Ignition temperature: 515.5°C (960°F)

Decomposition temperature: Not determined

Danger of explosion: Product does not present an explosion hazard.

Explosion limits:

Lower: Not determined

Upper: Not determined

Vapor pressure: Not determined

Density at 20°C (68°F): 1.332 g/cm³

conditions to be avoided:

Decomposition will not occur if used and stored according to specifications.

Materials to be avoided: Oxidizing agents

Dangerous reactions No dangerous reactions known

Dangerous products of decomposition: Carbon monoxide and carbon dioxide

POTENTIAL HEALTH EFFECTS

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing dust/fume/gas/mist/vapours/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. Use personal protective equipment as required.

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

IF ON SKIN: Wash with plenty of soap and water.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF exposed or concerned: Get medical advice/attention. Immediately call a POISON CENTER or doctor/physician. Rinse mouth.

If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. Collect spillage.

ACCIDENTAL RELEASE MEASURES

After inhalation Supply fresh air and to be sure call for a doctor. Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice. After skin contact Immediately wash with water and soap and rinse thoroughly. Seek immediate medical advice. After eye contact Rinse opened eye for several minutes under running water. Then consult a doctor. After swallowing Seek immediate medical advice.

HANDLING AND STORAGE

Handling: Keep container tightly sealed. Store in cool, dry place in tightly closed containers. Ensure good ventilation at the workplace. Keep ignition sources away. Information about storage in one common storage facility: Store away from oxidizing agents. Keep container tightly sealed. Store in cool, dry conditions in well sealed containers.

FIRE FIGHTING MEASURES

Flash point: 165°C (329°F)

Ignition temperature: 515.5°C (960°F)

Decomposition temperature: Not determined

Danger of explosion: Product does not present an explosion hazard.

Fire fighting measures: Suitable extinguishing agents Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam. Information about protection against explosions and fires: Keep ignition sources away. Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. Decomposition will not occur if used and stored according to specifications.

Materials to be avoided: Oxidizing agents

Dangerous reactions No dangerous reactions known

Dangerous products of decomposition: Carbon monoxide and carbon dioxide

Ecological information:

Ecotoxicological effects: Remark: Very toxic for fish and plankton in water bodies. Do not allow product to reach ground water, water course or sewage system, even in small quantities. Danger to drinking water if even extremely small quantities. Very toxic for aquatic organisms Do not allow material to be released to the environment without proper governmental permits.

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- 400 022. 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 2012: DGFASLI

CENTRAL LABOUR INSTITUTE
N.S.MANKIKER MARG, SION, MUMBAI – 400022
 Telephone: 91-22-24092203, Fax: 91-22-24071986/24033995
 Visit us at: www.dgfasli.nic.in

S.No	Title of the Programme	Period	Coordinator (Technical)
1.	Workshop on Selection and Quality Assurance for Effective use of PPE	October,03-05	Mrs.M.K. Mandre
2.	Advanced Trg. Prog. For Industrial Doctors	October, 08-12	Dr.S.S.Waghe
3.	Workshop on Industrial Noise	October,09-11	Subhash Chandra
4.	Workshop on Hazard & Operability (HAZOP) Study	October 17-19	S.C.Sharma
5.	Making Safety Committee more Effective	October 29-31	R.N.Meena
6.	Refresher Course for Senior Inspectors of Factories	October 29 to November 09	S.Bharathi
7.	Ergonomics-A tool for Ensuring Safety, Health & Productivity at Work	November 06-08	Subhash Chandra
8.	Collaborative Training Programme with NSC Maharashtra Chapter on Industrial Safety	November 20-22	Milind T.Barhate
9.	Impact of Environmental Pollutants & their Control at Workplace	November 20-22	Subhash Chandra
10.	Productivity & Quality Improvement through Employee Participation	November 21-23	R.N.Meena
11.	Associate Fellow of Industrial Health (AFIH) Course for Doctors	December 03,2012 to February 28,2013	Dr. P.P. Lanjewar
12.	Workshop on Monitoring of Work Environment and its control in Industries	December 04-06	A.Sree Ramulu
13.	Training Methodology for Trainers	December 12-14	R.N.Meena
14.	Workshop on "Safety Reports"	December 19-21	S.Bharathi
15.	Safety in Storage Handling and Management of Hazardous Substances in Process Industries	December 17-19	S.C.Sharma

REGIONAL LABOUR INSTITUTE
SARVODAYA NAGAR, KANPUR - 208 005
 Telephone: 91-512-2218691/92, 2218745, Fax: 91-512-2215112
 E-mail Address: bmrlk01@gmail.com

S.No	Title of the Programme	Period	Coordinator
1.	One Month Certificate Course on safety & Health	November 1-30	A.K. Chakraborty
2.	Workshop on safety Audit	December 12-14	A.K. Chakraborty
3.	Training Programme On Safety & Health on Process Industry For Inspectors Of Factories	December 17-21	Dr. Brij Mohan

REGIONAL LABOUR INSTITUTE
TTTI P.O. THARAMANI, ADYAR, CHENNAI - 600 113
 Telephone: 91-44-22350737,25220888, Fax: 91-44-22355690
 E-mail Address: rlic@vsnl.net

S.No	Title of the Programme	Period	Coordinator
1.	Safety Audit	October 09-10	Dr.R.K.Elangovan
2.	Heat Stress	November 08 - 09	Dr. S.B. Mishra
3.	Occupational Safety and Health in Construction Industries	December 11 - 12	Dr.R.K.Elangovan

REGIONAL LABOUR INSTITUTE
LAKE TOWN, KOLKATA - 700 089
 Telephone: 91-033-25343254, 25342732 Fax: 91-033-25348182
 E-mail Address: regi_876109@bsnl.in

S.No	Title of the Programme	Period	Coordinator
1.	Occupational Health and environmental Medicine for Medical & non-medical executives of the industries"	October, 08-12	Director Incharge
2.	Workers Development Programme on Health	November, 21-23	Director Incharge
3.	One Month Specialized Certificate Course in "Safety & Health" for Supervisors	November 19 to	Director Incharge

TRAINING CALENDER FOR THE YEAR 2012: DGFASLI

REGIONAL LABOUR INSTITUTE
SECTOR 47, FARIDABAD (HARYANA) – 121 003
Telephone: 0129-246800-299 Fax: 0129-2737064
E-mail Address: rlifaridabad@yahoo.com

S.No	Title of the Programme	Period	Coordinator
1.	Storage, Handling & Management of Hazardous Substances	October, 17-19	M.R. Rajput
2.	Occupational Safety in Construction Industry	November, 6-9	M.R. Rajput
3.	Occupational Safety and Health in Construction Industry	Nov., 20-22	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 Accomodation on sharing and chargeable basis will be available on 'First-Come-First-Served' basis.

डीजीफासली की एक झलक

कारखाना सलाह सेवा और श्रम संस्थान महानिदेशालय (डीजीफासली) भारत सरकार के श्रम और रोजगार मंत्रालय का एक सम्बद्ध कार्यालय है। कारखानों और गोदियों में व्यावसायिक सुरक्षा और स्वास्थ्य से सम्बन्धित राष्ट्रीय नीतियां बनाने में एक तकनीकी पक्ष के रूप में मंत्रालय की सहायता करने के लिए तथा कार्यस्थल पर कामगारों की सुरक्षा, स्वास्थ्य, दक्षता और कल्याण संबंधी मामलों पर राज्य सरकारों और कारखानों को परामर्श देने के लिए भारत सरकार के श्रम मंत्रालय के अधीन डीजीफासली का गठन १९४५ में किया गया था। यह देश के प्रमुख पत्तनों पर सुरक्षा और स्वास्थ्य विधानों का प्रवर्तन भी करता है।

कारखाना सलाह सेवा और श्रम संस्थान महानिदेशालय (डीजीफासली) की संरचना में निम्नलिखित शामिल है:-

- मुंबई स्थित मुख्यालय
- मुंबई स्थित केंद्रीय श्रम संस्थान
- कोलकाता, चेन्नई, फरीदाबाद और कानपुर स्थित क्षेत्रीय श्रम संस्थान

डीजीफासली की संकल्पना:- सभी के लिए कारखानों और पत्तनों में कार्यस्थल पर सुरक्षा और स्वास्थ्य सुनिश्चित करने के लिए ज्ञान का सृजन, नीतियां बनाने, मानक और व्यवहार में उत्कृष्ट संगठन के रूप में स्थापित होना डीजीफासली की संकल्पना है।

डीजीफासली का उद्देश्य:- डीजीफासली का उद्देश्य भागीदारी, मार्गदर्शन, विशिष्ट क्षेत्रों में नियामक क्रियाकलापों के माध्यम से कारखानों और पत्तनों में सुरक्षित और स्वस्थ कार्यस्थल के लिए व्यावसायिक सुरक्षा और स्वास्थ्य में सुविज्ञता उपलब्ध कराना, और सूचनाओं का आदान-प्रदान करना डीजीफासली का उद्देश्य है।

डीजीफासली संगठन में मुंबई स्थित मुख्यालय, मुंबई स्थित केन्द्रीय श्रम संस्थान, चेन्नई, कानपुर, कोलकाता और फरीदाबाद स्थित चार क्षेत्रीय श्रम संस्थान तथा मुंबई, जवाहर लाल नेहरू पोर्ट, कांडला, मार्मुगांव, न्यू मैंगलोर, चेन्नई, तूतीकोरिन, कोच्चि, विशाखापट्टनम, कोलकाता और पारादीप स्थित ग्यारह गोदी सुरक्षा निरीक्षणालय हैं। डीजीफासली संगठन में लगभग १२९ अधिकारियों (इंजीनियर, फिजीशियन, औद्योगिक हाइजिनिस्ट, शरीर वैज्ञानिक, एर्गोनॉमिस्ट, औद्योगिक मनोचिकित्सक, कर्मशायल आर्टिस्ट आदि) और ८१ तकनीकी कर्मचारी सदस्यों का बहुआयामी दल है। डीजीफासली और केन्द्रीय श्रम संस्थान, मुंबई में विभिन्न विशिष्ट प्रभाग/स्कंध सम्मिलित हैं। यह संगठन आगे, विकास और बढ़ती मांग को पूरा करने के लिए तत्पर है। विकासशील देश में जहां विभिन्न और जटिल प्रक्रिया उद्योग बड़ी संख्या में विद्यमान है वहां कामगारों की सुरक्षा और संरक्षण एक कठिन कार्य है। तकनीक, औद्योगिक समाज की साख और समर्पित कर्मचारियों की शक्ति से सज्जित संगठन आने वाले कल की चुनौतियों को पूरा करने में सक्षम है। यह कार्यस्थल को सुरक्षित बनाने के लक्ष्य के लिए कृतसंकल्प है।

कारखाना सलाह सेवा और श्रम संस्थान महानिदेशालय के अधिष्ठान

ESTABLISHMENTS OF DIRECTORATE GENERAL FACTORY ADVICE SERVICE & LABOUR INSTITUTES

Inspectorate Dock Safety
Near Bunder Gate, Kandla Port
New Kandla-370210
Tel: 270249 Fax: 02836 - 270249
e-mail: idskandla@sancharnet.in

Directorate General Factory Advice Service & Labour Institutes & Central Labour Institute, Mumbai
N.S.Mankiker Marg, Sion, Mumbai-400 022.
PBX No.91-22-24092203
Fax: 022-24071986
Website: www.dgfasli.nic.in

Inspectorate Dock Safety
Operation Service Centre, 3rd Floor,
P.D'mello Rd., Mumbai-400 038
Tel: 22613391, 22692180
Fax : 022 - 22613391
Email: idsmumbai@vsnl.net

Inspectorate Dock Safety
POC Canteen Bldg.,
J.N. Port, Sheva
Navi Mumbai - 400 707
Tel: 27471584, 27470201

Inspectorate Dock Safety
Civil Mntnc. Off. Bldg.,
Mormugao Port Trust,
Headland Sada
Mormugao, Goa-403802
Tel: 2517334 Fax: 0832-2517334
E-mail: idsgoa@sancharnet.in

Inspectorate Dock Safety
New Mangaluru Port, Panambur,
New Mangaluru-575010
Tel: 2407781 Fax: 0824 - 2407781
e-mail: idsmlr@sancharnet.in

Inspectorate Dock Safety
C.D.L.B. Dispensary Building, G.V.Ayyar
Rd. Wellington Island, Kochy-682003
Tel: 2666532 Fax : 0484 - 2666532
Email: idscochin@sancharnet.in

Inspectorate Dock Safety
Tuticorin Port Trust Admn. Office Building,
P. B. No.4, Harbour P.O. Tuticorin-628004
Tel: 2352372 Fax: 0461 - 2352372
e-mail: ids-tuty@sancharnet.in



Regional Labour Institute*
Faridabad Sector 47,
Haryana - 121003
Tel No.: 0129-2225308
email: rlifaridabad@yahoo.co.in

Regional Labour Institute
Sarvodya Nagar, Kanpur-208 005
Tel: 2218691,2218692, 2218745
Fax : 0512-21511282
e-mail bmrlk01@gmail.com

Regional Labour Institute
Lake Town, Kolkata 700089
Telephone: 91-033-25343254,
25342732 Fax: 91-033-25348182
E-mail: regi_876109@bsnl.in

Inspectorate Dock Safety
Nizam Palace, 1st floor, 2nd M.S.O.
Building, 234/4, A.J.C. Bose Road,
Kolkata-700 020.
Tel: 22830718, 22830719
Fax : 033 - 22830718
Email: idskol@vsnl.net

Inspectorate Dock Safety
Badapadia, P.B. No.126,
Dist. Paradip
Odisha - 754142.
Tel : 222413
Fax : 06722 - 222413
e-mail: idsparadip@sancharnet.in

Inspectorate Dock Safety
Old D.L.B. Building, 1st Floor,
Port Area, Opp. Harbour Main Gate
Building, Yisakhapatnam-530 035
Tel: 2563857
Fax : 0891 - 2563857
Email: idsvizzag@sancharnet.in

Inspectorate Dock Safety
3rd Floor, Anchor Gate Building,
Rajaji Salai, Chennai - 600 001.
Tel: 25220888, 25246419
Fax: 044 - 25220888
Email: idschn@vsnl.net

Regional Labour Institute
Sardar Patel Road, Adyar, TTTI PO,
Chennai-600113
Phone: 22350737, 22351569, 22355690
FAX : (044) 2352457
email: rlichennai13@yahoo.co.in

Published by:

**Directorate General Factory Advice Service & Labour Institutes
Government of India, Ministry of Labour & Employment
Mumbai - 400022**

Labour Institutes:

Central Labour Institute, Mumbai

N.S.Mankikar Marg, Sion, Mumbai - 400022
PBX No.91-22-24092203
Fax: 022-24071986
Website: www.dgfasli.nic.in

Regional Labour Institute

Faridabad, Sector 47
Haryana - 121003
Tel No.: 0129-2225308
Email: rlifaridabad@yahoo.co.in

Regional Labour Institute

Sarvodya Nagar, Kanpur - 208 005
Tel: 2218691, 2218692, 2218745
Fax : 0512-21511282
E-mai: bmrlik01@gmail.com

Regional Labour Institute

Lake Town, Kolkata - 700089
Telephone: 91-033-25343254, 25342732 Fax: 91-033-25348182
E-mail: regi_876109@bsnl.in

Regional Labour Institute

Sardar Patel Road, Adyar, TTTI PO
Chennai - 600113
Phone: 22350737, 22351569, 22355690
FAX : (044) 2352457
Email: richennai113@yahoo.co.in

Website Address:

www.dgfasli.nic.in