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FROM THE DESK

With the advancement of science and technology use of computers have gained importance in the day-to-day life of people at the workplace as well as at home. Visual Display Terminal (VDT) comprises both the computer and the workstation for computer, like computer table, chair, accessories and work environment at the VDT. Productivity in the VDT line depends on proper human – computer interaction which depends largely on the design of the computer workstation. Therefore, any defect or mismatch in the human – computer interaction creates serious problems to the man. Problems linked with the VDTs are often complex . The problems are associated with the equipment in use, the environment and the work habits of the operators. Quite a large number of VDT operators experience different types of musculo-skeletal disorders, eyestrain, headaches, fatigue, etc. Behavioral optometrists have found that most of these symptoms are alleviated through a combination of correcting workstation conditions, posture, stress relieving lenses prescribed specifically for VDT operation, and in some cases, through improving vision skills with visual training.

Though the introduction of the computers in the day-to-day life has made the work area more comfortable but the health hazards at the VDT should also be kept in the knowledge of the users. This issue of the INDOSHNEWS will highlight various health hazards and their magnitudes associated with the VDT work.

I hope the information carried by the article 'OCCUPATIONAL HEALTH HAZARDS OF THE VISUAL DISPLAY TERMINAL OPERATORS' will be useful to the users.

S.K. SAXENA
EDITOR -IN-CHIEF

OCCUPATIONAL HEALTH HAZARDS AMONG VISUAL DISPLAY TERMINAL OPERATORS

DR. R. IQBAL

INTRODUCTION

Technological advances in recent years have led to the prevalence of computer and other electronic technologies in the everyday lives of people–at work place, at home and in the school (Forester, 1989; Fox, 1989; Postman, 1992). The recent technological innovations include the "Personal Digital Assistant" (Linderholm et al, 1992) and the inchoate fields of cyberspace (Gibson, 1984; Benedikt, 1992) etc. These systems include screen-based equipments like monitors, microcomputers, laser discs, various optical disc formats and a plethora of peripherals (Frenkel, 1989) etc. commonly known as Visual Display Terminals (VDT). The VDT is basically an electrical instrument built around a Cathode ray Tube (CRT).

All the VDTs exhibit an intrinsic problem of producing electrostatic charges on the face of the CRT. The charges can reach up to 50,000 volts per square inch. This positively charged surface tends to attract all negative ions in the intervening air space and neutralize them, thus creating hazardous ion depletion in the work area of the operator. The subsequent ion imbalance causes numerous health problems.The ion imbalance also increases the deposit of dust and other airborne contaminants onto the VDT screen as well as its operator.

Atmospheric ions are electrically charged molecules which make up the constituent gas in the air we breathe. Research has intensified regarding the possible health effects associated with ion depletion. Prof. Kruger (Kruger and Sigel, 1978; Kruger, 1963) has stated that "ions are biologically active. They exert a direct impact on the body's ability to absorb oxygen into blood cells, oxidize serotonin in the blood stream and enhance or retard the body's efficiency in filtering airborne contaminants from lung tissue". His findings further isolate the "negative ions as being productive to biological efficiency and the positive ions are generally found to be detrimental". Other scientists like, Fisher (1986) and Hawkins (1984) also have linked the existence of air ion depletion to detrimental biological and behavioral effects in humans. Hawkins conducted an extensive study to determine if positive and negative atmospheric ionic levels could influence actual performance levels as well as attitude of the VDT operators. He has observed that majority of VDT operators (5:1) reported feeling more comfortable and alert when the deionized environment in which they had been working was replenished with a natural level of negative ions (anions). His studies also revealed that replenished anionic air increased work efficiency and productivity in relation to VDT operators with a concurrent reduction in reported symptoms like nausea, dizziness, stress and fatigue etc.

HEALTH PROBLEMS IN VDT- WORK

Visual Display Terminal Hazards

The design and quality of the earlier VDTs (prior to 1970s) were inferior in comparison to today's standards. There were high electro-magnetic emissions (EMR) including the dreaded ionizing X-rays and ultraviolet rays, which are known to be carcinogenic. The modern machines are being made considerably free of these hazards by substantial reduction in tube voltage and better shielding. But low energy non-ionizing emissions still exist. These include microwave, infrared rays and radio frequencies of various wave- lengths The EMR is believed to have the following biological effects:

1. **Central Nervous System (CNS)**: Brain function and behaviour patterns are affected.

2. **Cardio Vascular System**: i) Blood cell production gets suppressed. ii) Heart muscles become more excitable and heart rate increases.

3. **Reproductive System**: Incidence of diminished fertility is reported among a few Terminal Operators.

4. **Immuno-system**: Body resistance is diminished.

5. **Visual Problem**: Visual fatigue, eye-strain etc. are very common among Terminal Operators. Symptoms reported are aches, burning sensation, redness in the eyes, difficulty in focusing, headaches and giddiness, etc. Incidence of cataracts has also been reported among the Operators which might be, perhaps, attributed to high electro magnetic radiations.

6. **Facial rashes**: Facial rashes sometimes occur due to static electricity generated around the Terminals. The problem can usually be controlled by maintaining an adequate level of air humidity in the work area and by using antistatic materials to cover the floor.

7. **Pregnancy risks**: Prolonged exposure to electromagnetic radiation may lead to risk of miscarriage and abnormalities among offspring.

Musculo-Skeletal Disorders

The muscles, tendons, ligaments, joints, bones, cartilage and discs in the spineconstitute Musculo-Skeletal System. Injuries or disorders to these parts is referred to as "Musculo-Skeletal Disorders" (MSD). In the context of computer-work scenario, the individual disorders themselves are complex and represent a wide array of conditions that are also commonly referred to as "Cumulative Trauma Disorders" (CTD) or "Repetitive Strain Injuries" (RSI).

CTD are a class of injuries that arise out of excessive stress on the body due to improper workstation design. Four major factors contribute to their developments:

- Awkward work posture
- Force
- Frequency of repetition
- Time

Constrained/Awkward work posture plays a major role in the development of CTD. The most common CTD's among the visual display terminal operators are as under:

Problems in Back and shoulder

This problem can be caused by poor body positions and sustained immobility with a tense posture of the neck, shoulders, arms and wrists. The symptom is pain in the neck and shoulders. The improper body position is due to sitting without adequate back support or improper heights of the office furniture used by the operators. Lack of flexibility in the workstation can also contribute to these problems.

Cervical Hunch and Nerve Root Compression

Many keyboard users slump backwards in their chairs after working for longer period. This posture causes kyphosis (bent-spine) in the lower back; a hunched upper back and neck. This may lead to compression of the nerve roots of the brachial plexus as it leaves the spinal cord. This posture also predisposes the typist to lower back pain, prolapse of lumber discs and sciatic nerve compression at the root. Extensive studies conducted in New Zealand have concluded that the genesis of such problems is mainly due to mismatch in the man machine system/ non-ergonomic workstation posing constrained body posture in VDT work.

Tendinitis

It is an inflammation/pain of the tendon, usually near a joint or bony surface. Tendons are like chords that connect muscles and bones. Tendons twist and bend, but do not stretch and shrink. Mostly tendinitis occurs in lower arm / hand or

shoulder regions due to overuse and awkward posture adopted by those body parts while working in the VDT due to faulty workstation. Tendons can eventually fray and tear.

Carpal Tunnel Syndrome

It is a specific injury, often begins as tendinitis in the wrist or hand area and becomes progressively worse, leading to many other associated problems. It is a painful condition of the hands and the wrists. It is caused by the pressure on the median nerve, which runs from the shoulders, down the arms, to the hands. Tendons of the fingers pass through a tunnel called CARPAL TUNNEL, which is a rigid tunnel formed by the bony arch of wrist bones and a tough band of tissue called ligament. In addition to the tendons, there are blood vessels and the median nerve passing through the tunnel. If the tendons, become inflamed, they will swell inside the tunnel. Because of the rigidity of the tunnel, the nerve will be compressed and irritated which is referred to as CARPAL TUNNEL SYNDROME. The major causes of the carpal tunnel syndrome are:

- Working with bent wrists
- High rate of repetitive motions of the wrists
- Forceful hand motions
- Improper rests of the hands and wrists

Proper workstation design and work-rest regiment pause can prevent the misery.

Epicondylitis

Pain appears near the epicondyl on the outer side and is due to chronic inflammatory reactions of tissues in the Elbow region, which might spread even up to the forearms. This is also known as 'Tennis- Elbow'. The main conditions that attribute to the problems are repetition, rotating the forearm or force.

Tenosynovitis

It is a general term for repetitive-induced tendon injury involving synovial sheath. With extreme repetition, the sheath will be stimulated to produce excessive amount of synovial fluid. Excess fluid accumulates and the sheath becomes swollen and severely painful making the life miserable.

The major causes of the tenosynovitis are:

- Working with wrists bent backward
- High rate of repetitive motions of the fingers
- Improper rests of the hands and wrists

Quadruple crush

This is caused by the stress on the median nerve and ulnar nerve at shoulder, elbow and wrist areas, resulting permanent damage and dying off the nerves. At first, it is a gradual process, which takes place without the knowledge of the operator regarding the nature and degree of damage. Gradually, parts of the hand become anesthetic and the muscles at the root of the thumb become weak and can no longer become activated. In the later stage, due to further degeneration of the nerves, hand becomes considerably thin and griping becomes difficult due to loss of strength at thumb region.

CONCLUSION

Health hazards experienced by the operators at VDT are often complex. These are associated with the workstation, environment and the work habits of the operator. The problems can be prevented/minimized at the root by applying ergonomic practice in the designing of the workstation, working environment as well as through regular exercise habits of the workers.

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IDENTIFICATION OF HAZARDS IN A CHLORALKALI PLANT IN NORTH INDIA THROUGH SAFETY AUDIT

S.S.Gautam & S.K. Shrivastava

INTRODUCTION

Chloralkali plants produce substances like chlorine, caustic soda, hydrochloric acid, bleaching powder etc. that pose hazards to workmen and risk to inhabitants of the surrounding communities.Large inventories of chlorine gas render the plant a major risk for the plant and the property in and around the factory. Escape of toxic chlorine gas contained in storage tanks may lead to a major disaster for all the forms of life up to many kilometers. Operations of plants come under the purview of several statutes like Factories Act & Rules, Static & Mobile Pressure Vessel Rules, Gas Cylinder Rules, Manufacture, Storage and Import of Hazardous Chemicals Rules etc. A Safety Audit was carried out in a chloralkali plant situated in the Northern Region in the year 2000. The objective of the audit was to identify the hazards arising due to deviations in the plants, equipment and practices from those laid down in the applicable statutes, codes of practices, standards and standard operating procedures and to suggest the measures to minimize the hazards. This paper presents the experiences gathered during the safety audit.

METHODOLOGY

The visit to the plant was made in two phases to complete this audit. The first visit was, primarily, to get acquainted with the equipment and processes of the plant and to identify the statutes and standards attracted by the operations carried out in it. The safety audit checklist contained in BIS 14489 (1998) was used as the primary instrument to carry out the audit. It was, however, augmented with some additional points to ensure that the requirements of Factories Act & Rules, operating procedures and codes of practices are not overlooked. The observations were made by various modes such as enquiries with the executives of concerned departments of the factory in association with the head of the safety department of the plant, field visits, interviews with different level of employees and perusal of related documents.

OUTLINE OF PROCESS

The basic process reaction that took place in the manufacture of chlorine and caustic soda involved electrolysis of brine (saturated solution of sodium chloride), which dissociated the sodium chloride with chloride ion going to anode generating chlorine gas and sodium ion going to cathode to subsequently react with water to produce sodium hydroxide and hydrogen gas.

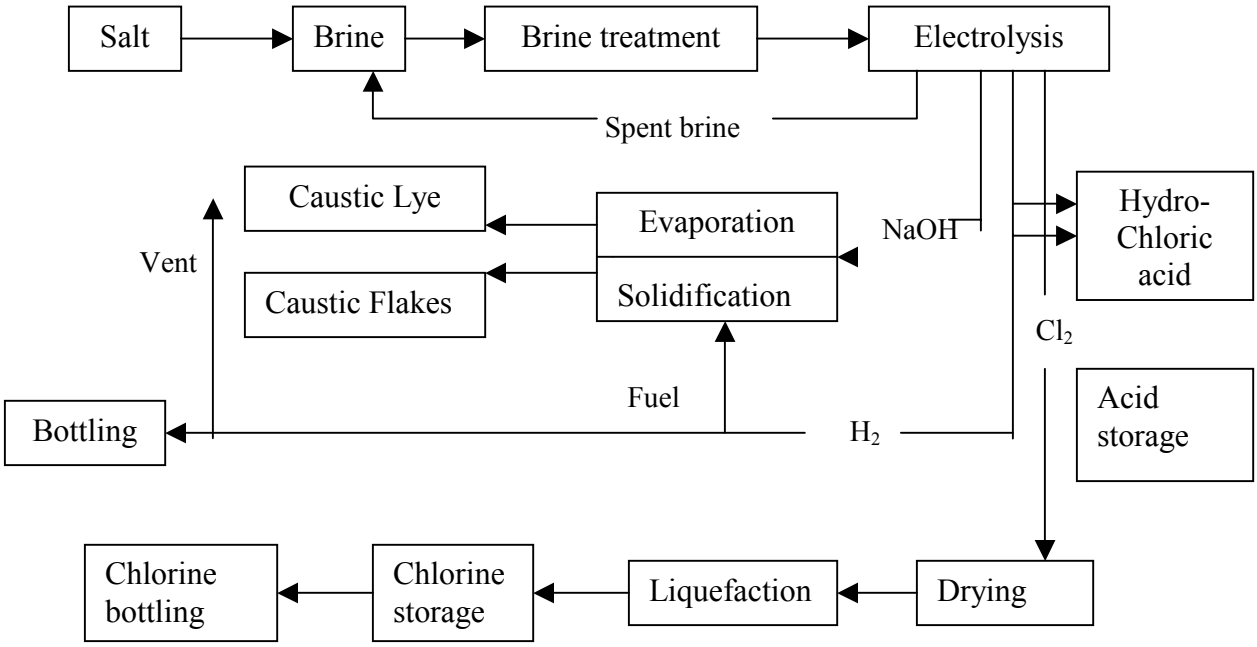
$NaCl = Na+ + Cl^-$ (Electrolysis)

$Cl^- + e+ (anode) = Cl2$

$Na+ + H2O + e^- (cathode) = NaOH + H2$

Several systems like diaphragm cell process, mercury cell process and membrane cell process are available to accomplish this reaction. Till few years the mercury cell process was most common, but due to the problem of mercury contaminations of workroom and general environment, this has been abandoned in India. Most of the plants are presently using membrane cell process. The present plant had two units. The unit –1 was directly built on membrane cell process whereas the unit –2 was originally a mercury cell system, which was subsequently onverted into membrane cell system by making necessary modifications at different stages.

The brine was prepared by saturating the spent brine. The solution so prepared was treated to remove the calcium, magnesium and sulphate impurities by proper treatment. The secondary treatment was done with the help of ion exchange columns. The brine was electrolysed in the membrane cells. The chlorine and hydrogen gases were recovered from the two electrodes. The overflow of one electrode was 20% NaOH and that of other one was spent brine. The caustic solution was further concentrated by evaporation to bring it to 40% concentration. The chlorine gas recovered was dried in concentrate sulfuric acid column, filtered and liquefied by compression followed by cooling. The liquefied gas was stored and bottled. The hydrogen gas produced was partly used in caustic concentration and caustic solidification whereas the remaining gas was transferred to nearby gas bottling factories through pipelines.



FLOW DIAGRAM OF THE CHLORALKALI PLANT

OBSERVATIONS & DISCUSSIONS

THE SAFETY POLICY

The safety policy of the company had been signed by the managing director of the company, published in the form of a pocket brochure and has been distributed amongst the employees. The policy declares the commitments and priorities of the management but overlaps the responsibilities of the line management and safety department. It should be realized that the safety department would be very effective when it is advisory to top management on safety and health matter. The policy contained some clauses, which sounded like standing instructions. Such clauses dilute the effectiveness of the policy. Descriptive clauses about the provision of personal protective equipment or medical examination, which are already covered by statutes will limit the scope of policy and hence, should be avoided. Display of important features of the safety policy in the language understood by all the employees at conspicuous locations is needed as this will render the policy more popular and will show that the management gives due value to safety.

THE SAFETY DEPARTMENT

The safety department was headed by the Manager (Safety) and was assisted by Engineer (Safety, Environment & Training). Both were qualified and duly approved even though the rules required only one safety officer (keeping in view the total employment). The Manager (Safety) was reporting to a second line executive. Reporting of Chief Safety Officer to the top executive as required under the Factories Rules would render the department more effective. It also needs to be ensured that activities of human resource development and general environment are not carried out as part of the safety department which may otherwise dilute the dedication and will contravene the requirements of the Rules. There was a Safety Committee and was functioning by and large as per requirement

ACCIDENT INVESTIGATION & REPORTING

The system of Accident Investigation & Reporting is generally adequate. The records of investigation of dangerous occurrences and near misses were not kept. The recommendations derived from such occurrence, may give added expectance to prevent and subsequent accidents.

SAFETY INSPECTIONS

The safety department did carry out safety inspections. The report was being submitted to the respective departments with copy to the top management. It is advisable that the report should be submitted to the top management with a copy to the department to render them more effective. Development of safety checklists by creative checklist Hazop system for each department is advisable.

FIRST AID CENTER

The company had a first aid centre in addition to first aid boxes and trained first aiders in various departments. A Registered Medical Practitioner headed the center. There was no medical officer duly trained in occupational health, which is a requirement under the Factories Rules.

MOTIVATIONAL SCHEMES

The company had been running several motivational schemes to keep up the enthusiasm of the employees towards safety and health. There is, however, a need for an in-house periodical dedicated to safety.

GENERAL SAFETY & HEALTH

The company was running ongoing activities to keep up the general safety and health conditions in the plant. Majority of raised platforms were rendered safe by railings and toe boards. The highly corrosive nature of substances like sodium chloride, hydrochloric acid and chlorine made this task very difficult. Such industries are required to put a lot of extra efforts to ensure that the railings are kept well painted and are replaced as and when corroded. The machines in the maintenance workshop were unguarded. Some of the pump couplings were also found unguarded. There appeared to be no problems regarding ventilation, although regular workplace monitoring to assess the exposure of the workman was not being done. The noise in the compressor and generator rooms appeared to be high. There was a need for noise survey of the plant. Need for measurement of illumination level at different places during daytime as well as night was felt.

EXTERNAL SAFETY AUDITS

The management had got conducted similar external safety audits earlier also. The compliance report of the last audit (carried out two years back by the same institute) indicated that about 75% of the suggestions were implemented.

CRITICALITY OF RISK

The computations of criticality of risk due to release of chlorine gas have been done and the data have been included in On-site emergency plan.

STANDARD OPERATING PROCEDURES

Standard Operating Procedures existed in the plant, but there is a need to review and ensure that all safety aspects have been included in it. This could also be done by HAZOP technique.

WORK PERMIT SYSTEM

Work permit system was being satisfactorily followed for all the electrical maintenance work, entry into confined spaces, working at height and all other hazardous activities.

SOLID WASTES

The solid wastes like brine filtrate and calcium hypo slurries were dried on impervious ditches. The rainwater overflow of these ditches was treated in liquid waste treatment plant.

WASTE CHLORINE

The waste chlorine was recovered from different points in the plant and was neutralized by calcium hydroxide slurry in hypo tower. The boiler smoke is released at a higher altitude height with the help of stack.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment were made available to the workmen as and when required. There is a need for periodic cleaning, disinfecting and inspecting protective devices kept at different places. A need for hard toe safety shoes in mechanical workshop was identified.

FIRE HYDRANT SYSTEM

Though the factory was not fire prone, the fire hydrant system was maintained well. Portable Fire extinguishers of suitable types were also kept at different places. The management had mutual aid programme with the two nearby organizations for exchange of fire control facilities in the event of an emergency.

ON SITE EMERGENCY PLAN

The onsite emergency plan had been prepared and submitted to the statutory authorities for approval. It is advisable that the emergency preparedness is to be acquired as early as possible. Hence training and rehearsal as per existing plan are required to be done and ongoing changes to be incorporated as and when required with a copy to the statutory authority.

MATERIAL HANDLING EQUIPMENT

Movements of tractor-trailers for handling the salt bags required improvements like avoiding overloading, driving by a licensed driver, following traffic rules, etc. Some of the material handling equipment like hooks for slinging, and the procedures of lifting the cylinders were not as per the standards and duly certified.

CHLORINE STORAGE TANKS

A parapet wall provided with drainpipe with valve surrounded the chlorine storage tanks. But the valve was left open. The separating walls of less height have been suggested in between each tank. The storage areas were provided with fixed and mobile exhaust devices to suck the released gas and divert to hypo neutralizations tower. The tanks were provided with twin rupture disc-safety valve devices with pressure monitoring in control room. There was no interlock to ensure that both the valves cannot be isolated at a time. Insitu monitoring with logbook entries is also suggested. One tank was kept empty for use in emergency in each of the two tank yards.

Liquefied chlorine gas lines provided to transfer the gas from liquefier to storage tanks and from storage tanks to the bottling plants were originally provided with the rupture disc/expansion valve with pressure monitoring in between. It was seen that most of such systems had been isolated and were removed. These are required to be provided to save the lines from rupture due to thermal expansions of the trapped liquid.

CHLORINE TONNERS

The Chlorine tonners were being stacked one over the other up to 4 layers, which is not proper. The handling of tonners was being done by chain sling and hook. The spreader beam with hooks at the sides is safer as recommended by some standards for chlorine tonners. Tonners were being hydraulically tested once in every two years. An arrangement was there for gas left in the gas filling tube before disconnecting the copper tubing after filling chlorine. Other gas cylinders were being stored in dedicated store but were not clamped or chained to the wall. The caps of some of the cylinders were not in place.

HYDROCHLORIC ACID STORAGE

The dyke walls of acid resistant material surrounded the hydrochloric acid storage tanks but the distance between the tank and the dyke wall brim was insufficient to contain all the jets ejecting out from the walls of the tanks. The minimum distance of the dyke wall from the tank wall can be calculated. The dyke walls were not properly sealed which defeated their very purpose. The pumps of some tanks were housed within the dykes which is improper. The vents of some tanks were connected with the sniff chlorine line going to lime slurry scrubbing. The overflow pipes were provided at the bottom. But there was no vessel to receive the overflow. Level of the tanks was being monitored both at the control room as well as insitu.

CAUSTIC LYE TANKS

Caustic lye tanks were also surrounded by dyke wall. The drain pipes were provided but most of the dykes were not sealed properly. In the acid and alkali tank areas there were displays about the hazardous properties, preventive measures and emergency response procedures. Most of the areas where hazards of corrosive and toxic substances existed were provided with eyewash and safety shower for decontamination. The caustic and hydrochloric acid filling platforms also required quick decontamination facilities.

TRANSPORTATION OF CHLORINE TONNERS

The chlorine tonners transportation was being done in trucks by keeping multiple layers of toners. The tonners were kept one over the other along the body walls. Suitably designed wooden settles have been suggested. Some lorries were displaying the hazard symbols and emergency response panels were displayed in some tanks and truckers. These should be displayed in all the transport vehicles used for transport of dangerous material.

CONCLUSIONS

The status of Safety, Health & Environment at the plant was found to be quite satisfactory. If observation and recommendations made in the audit report are implemented these would help enhance the standard of Safety, Health and Environment. The plant had already taken most of the steps to a high level of safety; still there is scope for on going efforts to keep up the safety and health level of the plant.

In all, about 120 recommendations were formulated on the basis of these identification of problem areas.

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STUDY OF NOISE LEVELS IN A LARGE AUTOMOBILE INDUSTRY

This study was conducted by Regional Labour Institute, Chennai. Various operations carried out in Press and Body Shop of the factory produced high sound levels to which the workers were exposed. Complete body of the car was produced in Press and Body Shop by joining different components together. Number of workers employed in the shop was about 450 including staff and executives.

OBJECTIVE

The objective of the study was to measure the sound levels at different locations and to suggest the remedial measures wherever necessary to control the noise levels and to prevent the excessive exposure of the workers.

MANUFACTURING PROCESS

Press and Body has been one of the major shops in the factory where complete body of the car is produced. This shop employed about 450 employees. A steel sheet roll was cut into small pieces and pressed in 3500 tons capacity transfer hydraulic press to make different components in the Press shops. These components were joined together in the Body shop to make the complete body of the car.

There were two hydraulic presses of 3500 tons capacity each located parallel in Press shop. Six workers were employed in each press at a time.The press, while in operation, generated a lot of noise. The operators engaged in the Press shop were found using ear plugs. Components received from Press shop were joined together by different types of welding in the Body shop. Grinding and buffing were also carried out at some places in this shop which produced high sound levels. In addition, a lot of sirens and hooters were used as warning indications to operators working in the area which produced very high sound level.

Harmful effects of noise are of two types – auditory and non auditory. Auditory effects include temporary threshold shift, acoustic trauma and noise induced permanent hearing loss. The non auditory effects include mental tension, annoyance, fatigue, restlessness, nervous irritability, increased muscle tension, dizziness, rise in heart rate etc.

FINDINGS

Sound levels in blanking area and the Press shop were found exceeding the TLV for noise i.e. 90 dBA. The noise levels near hydraulic pump in the basement of Press shop and near compressors in the compressor house were found exceeding 90 dBA. However, the noise levels in body shop were found within the permissible level except near grinding operation where it exceeded 90 dBA.

RECOMMENDATIONS

Remedial/control measures have been suggested which include providing a partition with sound absorbing material in between Press and Body shop, use of ear plugs among all workers engaged in noise areas, provision of sound proof cabin for operators in compressor house, audiometric examination of workers engaged in noisy areas and proper and regular maintenance of all machines ,etc.

STUDY ON PROCESS SAFETY IN A PESTICIDE INDUSTRY

This study was conducted in a pesticide plant by Regional Labour Institute, Chennai. The industry was engaged in the production of technicals as well as pesticide formulations. It had three Process Plants for manufacture of Ethion, Acephate , Dimethoate, Carbendazim and Cypermethrin. In addition, the factory had two Formulation Plants for Dusting powder, Granulation and Emulsifiable concentrate. The factory had 80 employees including management and workers.

MANUFACTURING PROCESS

Manufacture of Carbendazim technical involved three stages i.e. Methylation of Thiourea, Methoxy Carbonization and Condensation with OPDA.

Acephate manufacture also involved three stages i.e. Isomerization, Acetylation and Hydrolysis. DM PAT was isomerized by adding Di-methyl sulphate to get Methomidaphos which was acetylated with acetic anhydride. Acetylated product was hydrolised with Ammonia and organic aqueous layers were separated. Organic layer was distilled and Acephate technical was obtained after crystalisation and drying.

Manufacture of Cypermethrin involved three stages i.e. premix, Cyano Esterification and distillation. MPBD and DV acid chloride were mixed to get premix. Sodium cyanide was mixed with the premix to get crude Cypermethrin. The mass was dissolved in solvent. Organic layer was distilled for recovery of solvent and to obtain the finished product. Formulation of emulsifiable concentrate, dusting powder and granulated Phorate was carried out in two plants. Technical pesticide and the filler material along with wetting dispersing agent were fed into the feeder of the microniser. Micronised material was discharged into the ribbon blender and mixed for two hours and then packed in bulk packings as dusting powder. Required quantity of solvent, liquid technical pesticide and emulsifiers were pumped into the vessel. Stirring was continued for two hours and the Emulsifiable concentrate was discharged into the storage vessel. Bentonite granulses were spread over the Phorate technical coating agent in both mixer. Granulated product after approval from Quality Control Department was packed in small laminated HDPE bags.

FINDINGS

A number of deficiencies were observed in formulation areas, storage area and in the Safety Management System . There were also deficiencies related to Process Safety in all the three plants.

RECOMMENDATIONS

Various remedial measures have been suggested to improve and maintain safe working conditions. Some of which include providing high temperature alarm with the reactors involving exo-thermic reaction, providing gas monitors with alarm system for gases like H2S, HCN etc., maintaining of scrubbing systems in good working order, improvement of Ammonia feeding system, provision of vacuum gauge with the distillation vessels, periodic testing and examination of vessels maintained under vacuum etc. Remedial measures have also been suggested to improve the conditions in the formulation area which included providing an exhaust chamber for keeping the drum while transferring liquid technical pesticide into formulation vessel, providing bag filters with the Pre-blender for dust control, maintaining Phorate scrubber in working order etc.

Safety measures have been suggested for improvement in the storage area which include providing proper dyke walls, provision of proper level Indicators with the storage tanks, shifting of pumps, valves etc. outside the dyke walls, provision of drainage with the dyke, emergency shower/eye wash fountain near the storage area, provision of proper overflow pipe with the storage tanks etc. Remedial measures have also been suggested to improve the Safety Management System which include framing Occupational Safety and Health Policy, Constitution of Safety Committee, development of safe operating procedures, introduction of accident investigation, analysis and reporting system, work permit system, preparation of P & I diagram, start-up and shut-down procedures, etc.

TRAINING PROGRAMME ON EMERGENCY PLANNING AND PREPAREDNESS IN MAJOR ACCIDENT HAZARD INSTALLATIONS

PROGRAMME PERSPECTIVE

The growth in demand of chemicals and advances in technology has resulted in an increase in size of chemical and associated plants using hazardous chemical. Large chemical complexes have been formed by the integration of related and inter dependent processes on single site. Despite the high standard of care normally exercised in such plants, accident may still occur. Consequence of such an accident (Fire, Explosion and Toxic release) may affect not only plant, facilities, personnel within the site but also a larger number of people, amenities and buildings in the surrounding area. A well developed Emergency Plan plays a greater role in minimizing the effect of such an accident. In accordance with 'The Manufacture, Storage and Import of hazardous Chemical Rules, 1989' an Occupier has to prepare an Emergency Plan for dealing with major accident on this sites.

OBJECTIVE

To develop mitigation and control related strategies to minimize damage to life, properties and environment due to major accident by familiarizing the participants with:

- The statutory obligations
- Hazard identification techniques
- Methods of control and mitigation of emergency
- Guidelines for preparation of emergency plan

HIGHLIGHTS

- Statutory obligations
- Hazard and Operability study
- Hazardous Chemical Processes
- Fault Tree Analysis
- Fire & Explosion Impact Assessment (BLEAVE,UVCE & POOL FIRES) Toxic Releases and impact assessment
- Emergency Plan

MODE OF TRAINING

- Audio Visual
- Syndicate Exercises
- Case Studies

PARTICIPANTS

Supervisors, Managers and Safety Officers of Major Accident Hazard installations.
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DURATION: 2 DAYS

Conducted by:

Major Accident Hazard Control Advisory Division, Central Labour Institute, Sion, Mumbai.400022

INTERNATIONAL OCCUPATIONAL SAFETY AND HEALTH INFORMATION CENTRE (CIS)

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 affiliated National Centres and 38 CIS collaborating Centres. 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:

- Microfiches on original documents abstracted in CIS DOC (CISILO)
- ILO CIS Bulletin "Safety and Health at Work"
- Annual and 5-year indexes
- The CIS Thesaurus
- The list of periodicals abstracted by CIS

EXCERPT FROM CIS DOC

Title: Manganese exposure in foundry furnacemen and scrap recycling workers.

CIS ACCESSION NUMBER
CIS 00-1680

The aim of the study was to investigate the sources and levels of manganese exposure in foundry furnacemen by a combined measuring of blood-manganese (B-Mn) and manganese in ambient air (air-Mn). Air-Mn and B-Mn were measured during and after exposure in 24 furnacemen employed in foundries and in 21 workers from a scrap recycling plant. Furnacemen who work in insufficiently ventilated smeling departments inhale, absorb and retain significant amounts of manganese in their blood despite a generally low measured airborne level of manganese fumes. The exposure values compared with post-exposure values revealed a significant decrease in the B-Mn level of the most exposed furnacemen. Two persons were suspected of suffering clinically subacute manganese intoxication as both had B-Mn levels beyond the normal limit. The results indicate the B-Mn may be a valuable parameter for estimating recent exposure (within 1-2 weeks).

Note:

For details write to CIS National Centre for India, Central Labour Institute, Sion, Mumbai 400 022.

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.

IDENTIFICATION

Product Name : **NOVAPOL (R) POLYETHYLENE**

HAZARDS IDENTIFICATION

Emergency Overview: Clear to white, inert, solid pellet or granular material. Nonflammable, but will burn on prolonged exposure to flame or high temperature.When heated to decomposition, product emits acrid smoke and irritating fumes.
Potential Acute Health Effects: Contact with molten resin will burn unprotected skin and eyes. Solid does not appear to affect the skin.
Potential Chronic Health Effects: CARCINOGENIC EFFECTS: [Ethylene homopolymer] None
by NTP, None by OSHA. [Crystalline Silica] Classified 1 (Proven for human.) by IARC. Classified 2 (Reasonably anticipated.) by NTP.
MUTAGENIC EFFECTS: None known.
TERATOGENIC EFFECTS: None known.
DEVELOPMENTAL TOXICITY: Not toxic. This product is not considered toxic. The crystalline silica is inextricably bound or coated by polyethylene; this appears to prevent any toxic reaction with the lung. Most polyethylene particles are considered too large to be breathed into the lung.

FIRST AID MEASURES

Eye Contact: Flush with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation persists, seek medical attention.
Skin Contact: Wash contaminated skin with soap and water. Contact with molten resin will burn unprotected skin. Solid does not appear to affect the skin. Should a burn occur, cool burn area immediately with cool clean running water until no heat is emitted from burn area. Cover with light, dry dressing. Do not apply ointments or puncture blisters. Obtain medical assistance.
Hazardous Skin Contact: Not applicable.
Inhalation: Remove to fresh air. Assist breathing if necessary. Obtain medical attention.
Hazardous Inhalation: Not applicable.
Ingestion: No known health hazard appears to be posed by the ingestion of small amounts of polyethylene. A physician should be consulted if large amounts are ingested.
Hazardous Ingestion: Not applicable.
Notes to Physician: 1-800-561-6682 (24 hours) Smoke and hazardous decomposition products produced in fires involving plastic resins can be irritating and may cause pulmonary edema in severely exposed individuals. As this effect may be delayed in onset, a 72-hour post-exposure observation is recommended. Carboxyhemoglobin levels should also be monitered to assess the degree of carbon monoxide absorption in these individuals.

FIRE FIGHTING MEASURES

The product is: Nonflammable, but will burn on prolonged exposure to flame or high temperature.
Auto-Ignition Temperature: The lowest known value is 349 deg C (660.2 deg F) (Ethylene homopolymer).
Flash Points: Not applicable.
Flammable Limits: Not applicable.

Products of Combustion: Carbon dioxide, carbon monoxide, aldehydes and small amounts of other organic vapours may be produced.
Fire Fighting Media and Instructions:
SMALL FIRE: Use water spray or fog.
LARGE FIRE: Use water spray, fog or foam. Do not use water jet. Full-face, NIOSH-approved self-contained breathing apparatus and appropriate protective clothing must be worn by all individuals required to enter the hazard area.

Special Remarks on Fire Hazards: Nonflammable, but will burn on prolonged exposure to flame or high temperature. When heated to decomposition it emits acrid smoke and irritating fumes.

Special Remarks on Explosion Hazards: Powdered material may form explosive dust-air mixtures, ground equipment. Static charges can accumulate during shipping, unloading, pouring, or conveying. Dissipate static electricity during transfer by grounding and bonding containers and equipment.
Fire Hazards in Presence of various Substances: Take precautionary measures against static discharges.
Explosion Hazards in Presence of Various Substances: Risk of dust-air explosion is enhanced if flammable vapours are also present.

HANDLING AND STORAGE

Precautions: Ground all equipment containing material. Static charges can accumulate during shipping, unloading, pouring, or conveying. Practice good housekeeping and good personal hygiene. Keep away from sources of ignition.
Incompatibility: Non-reactive with reducing agents, combustible materials, metals and moisture. Very slightly to slightly reactive with oxidizing agents, acids and alkalis.
Storage: Keep container dry. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place.

TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation.
Toxicity to Animals: LD50: Not available.
LC50: Not available.
Acute Effects on Humans:
Eyes: Slightly hazardous in case of eye contact (irritant).
Skin: Slight hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Inhalation: Negligible hazard at ambient temperatures. Inhalation of vapours released at high extrusion and molding temperatures and fine dust particles may cause mild respiratory tract irritation but is not known to cause any significant health effects.
Ingestion: Non-hazardous in case of ingestion.
Chronic Effects on Humans: CARCINOGENIC EFFECTS: [Ethylene homopolymer] None
by NTP, None by OSHA. [Crystalline Silica] Classified 1 (Proven for human.) by IARC. Classified 2 (Reasonably anticipated.) by NTP. MUTAGENIC EFFECTS: None known.
TERATOGENIC EFFECTS: None known.
DEVELOPMENTAL TOXICITY: Not toxic.
This product is not considered toxic. The crystalline silica is inextricably bound or coated by polyethylene; this appears to prevent any toxic reaction with the lung. Most polyethylene particles are considered too large to be breathed into the lung.

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.400022. MSDS on about 1,00,000 chemicals/materials are available with Central Labour Institute. Computer printout will be supplied on nominal charge basis.

The Library-cum-Information Centre of Central Labour Institute has unique and rare collection of different kind of publications in the field of Occupational Safety, Health, Management and allied subjects. It also has a good collection of different standards, codes, regulations on these matters. In the current year the centre is subscribing to 25 Indian & foreign journals, besides receiving complimentary copies of different periodicals from all over the world. The centre provides facilities for study and research and at the same time supplies authentic and up-to-date information on Occupational Safety, Health and Management. It also extends reading facilities to students & scholars attending different training programmes & courses conducted by CLI. From January 2000 till date a number of publications in the field of OS&H have been added to Library. Some of them are :

COMPENDIUM OF LIBRARY ADMINISTRATION

Authors: P.K. Paliwal
Publisher: Ess Ess Publications, New Delhi

Administration involves the techniques by which the purpose of an organisation is fulfilled at minimum cost with minimum effort. Administration is, in fact, mainly concerned with the directive function through which an administrator unifies the efforts of all individuals engaged in an enterprise and guides their activities in the right direction.

The main function of a library is the collection and preservation of knowledge for its dissemination to all. Its conservation for posterity is also an important duty of a library. The libraries have changed the outmoded concept of preserving a large number of reading materials for the sake of preservation only. This book will be useful to those who pursue education and research in the area of library administration, electronic publishing and also to the ever increasing number of scientists, engineers, etc.

LEAD POISONING PREVENTION & TRAINING: IMPLEMENTING A NATIONAL PROGRAM IN DEVELOPING COUNTRIES.

Edited by: Abraham M.George
Published by: The George Foundation, Bangalore

This book is an outcome of the International Conference on Lead Poisoning held in Bangalore, India. The conference brought together under one roof some of the leading scientists, public policy specialists, industry leaders and senior government officials involved in health and environmental issues to examine the different dimensions of the problem currently faced by millions of children and others exposed to lead around the world. The event affirmed the global concern about lead poisoning – one of the largest environmental health problems facing the world today.

The conference had a very practical goal: to develop the framework for a national program for the prevention and treatment of lead poisoning in developing countries. The participants discussed the various dimensions of the lead poisoning problem from such a pragmatic viewpoint, and presented solutions during panel discussions and workshops. The result was a comprehensive list of specific ideas and action plans, with general consensus arrived at in almost all cases. This book attempts to present those concepts, ideas and practical solutions in their entirety. A separate “white paper” outlining “A Call for Action” is being presented to policy makers in developing countries.

FACTORIES ACT BEING UPDATED

The Factories Act is being updated and the Dock Workers (Safety, Health and Welfare) Act is being extended to more than 50 inland container depots of the country.

This was revealed by Labour Minister Satyanarayan Jatiya at a meeting of the Parliamentary consultative committee of the Ministry of Labour.

While the Factories Act is being reviewed to meet present-day requirements, the extension of the Docks Act to inland depots would provide safety and health protection cover to workers of these depots.

The Minister said a National Board on Occupational Safety and Health was planned for policy making and implementation of statutory requirements. The Directorate General of Factory Advice Service and Labour Institute has envisaged two schemes for providing safety and health in the unorganized sector.

The committee members suggested that the Factories Act should be amended to cover building and construction workers.

Source: Hindustan Times

फै क्ट्री अधिनियम में संशोधन पर विचार

नई दिल्ली,23अगस्त।केंद्र सरकार फै क्ट्री अधिनियम1948में संशोधनपरविचारकररहीहै ।अधिनियमका संबंधफै क्ट्रियों में
कार्यरतकर्मचारियों के लिएसुरक्षितएवं स्वास्थकार्यदशाओं से है ।सरकारकायहमाननाहै कि अधिनियमके प्रावधानपुराने पड़ गएहैं औरआधुनिकपरिस्थितियों से मेलनहीं खाते । इसलिए इनमें परिवर्तन की जरूरत है ।

श्रममंत्रालयसे संबद्धसंसदीयसलाहकारसमितिकी बैठक में श्रममंत्री डा.सत्यनारायण जटिया ने सदस्यों को सरकारकीइस मंशा से अवगतकराया ।उन्हों ने सदस्यों को सूचितकियाकि सरकारगोदी कर्मचारी अधिनियम,1986के दायरे को भी बढ़ाने जारहीहै ।अबदेश के 50से ज्यादा अंतरदेशीयकंटेनर डिपो भीइसकानून के दायरे में आएंगे ।इससे इनडिपो के कर्मचारियों को भीसुरक्षा तथास्वास्थसंबंधीसुविधाएं मिल सकेंगी ।

श्रममंत्री ने राष्ट्रीयकार्यगतसुरक्षा एवं स्वास्थबोर्ड बनाए जाने के सरकारके प्रस्तावकी जानकारी भीसमितिको दी । उन्हों ने कहाकि फै क्टरी एडवाइससर्विसएंड लेबरइंस्टीट्यूट (फाससली)के महानिदेशक ने इससिलसिले में दो स्कीमों का सुझावदियाहै ।इनस्कीमों के तहतप्रवर्तनअधिकारियों को असंगठितक्षेत्रके कर्मचारियों कीसुरक्षा एवं स्वास्थसंबंधी जरूरतों के बारे में प्रशिक्षितकियाजाएगा ।उनसे कर्मचारियों के बीचइससंबंधमें जागरूकता फै लाने को भीकहा जाएगा ।

फाससली के महानिदेशक ने केंद्र वराज्यसरकारों ट्रेड यूनियनों ,सेवायोजकों तथाअन्यसंबंधितलोगों को फै क्ट्रियों तथाबंदरगाहों में कार्यरतकर्मचारियों कीसुरक्षा,स्वास्थ्य, उत्पादकता तथाकार्यदशाओं के बारे में उचितपद्धतियां अपनाने की सलाहदी है ।डा.जटिया ने कहा कि फाससली के प्रयासों का हीनतीजा है किप्रमुखबंदरगाहों में दुर्घटनाओं की संख्या में भारीकमी आई है ।वर्ष 1986में जहां बंदरगाहदुर्घटनाओं की संख्या 457थी वहीं 1999-2000में यहआंकड़ा सिर्फ 250 परआगई थी ।सलाहकारसमितिके सदस्यों ने फै क्टरीएक्टमें संशोधनके वक्तभवननिर्माण में लगेकर्मचारियों की कार्यदशाओं को भीशामिलकिएजाने का सुझावदिया ।

Source: Jagran

TRAINING PROGRAMMES
OCTOBER TO DECEMBER 2001
CENTRAL LABOUR INSTITUTE ,SION, MUMBAI

Programme title	Contact person
Diploma in Industrial Safety	Director (Safety) & Incharge Indl.Safety Division
Training for Council of Industrial Safety Members	Director (Safety) & Incharge Indl.Safety Division
Evaluation and Control of Hazards in Fertilizer Industry	Director (Indl.Hygiene) & Incharge Indl.Hygiene Division
Occupational Back pains - Its evaluation, control & management	Director (Physiology) & Incharge Indl.Physiology Division
Bad work posture-Design for Ergonomic workstation for Safety, Health & Productivity at work	Director (Physiology) & Incharge Indl.Ergonomics Divison
Refresher Course for Safety Officers	Director(Safety) & Incharge Indl.Safety Division
TMT	Director (Staff Trg.) & Incharge Staff Training Division
Wage & Salary Administration	Director (Productivity) & Incharge Productivity Division
Physiological basis of manual material handling	Director (Physiology) & Incharge Indl.Physiology Division
Effective Leadership for Safety, Health & Productivity	Director (Indl.Psychology) & Incharge Indl.Psychology Division
Bad work posture - Design for Ergonomic workstation for Safety, Health & Productivity at work	Director (Physiology) & Incharge Indl.Ergonomics Division
Training programme on HAZOP	Director (Indl.Hygiene) & Incharge Major Accident Hazard Control Advisory Division

Programme title	Contact person
Advanced Training programme on Occupational Health & Environmental Medicine	Director (Medical) & Incharge Indl.Medicine Division
Productivity Techniques for Effective Employees participation	Director (Productivity) & Incharge Productivity Division
Industrial Ergo./Human factor for augmenting safety, health & productivity	Director (Physiology) & Incharge Indl.Ergonomics Division
Occupational Back pains -Its evaluation, control & management	Director (Physiology)& Incharge Indl.Physiology Division
Selection & Quality Assurance for Effective Use of PPE	Director (Indl.Hygiene) & Incharge Indl. Hygiene Division
Motivation for Safety, Health & Productivity	Director (Indl.Psychology) & Incharge Indl. Psychology Division
Testing and Examination Of lifting appliances & Pressure vessels.	Director (Safety) & Incharge Indl. Safety Division

TRAINING PROGRAMMES
OCTOBER TO DECEMBER 2001
REGIONAL LABOUR INSTITUTE ,SARVODAYA NAGAR, KANPUR

Programme title	Contact person
Workshop on "HAZOP"	Director Incharge
Chemical Safety for Safety Officers	Director Incharge
Chemical Safety for Safety Committee Members	Director Incharge
Personal Growth & Group Dynamics for improving Safety & Health at the Place of work	Director Incharge
Industrial Safety & Health	Director Incharge

TRAINING PROGRAMMES
OCTOBER TO DECEMBER 2001
REGIONAL LABOUR INSTITUTE ,KOLKATA.700 089

Programme title	Contact person
Safety Audit	Director Incharge
Appreciation Course on Industrial Hygiene	Director Incharge
Higher Productivity and Better Place to Work	Director Incharge
Refresher course on Occupational Health for Plant Medical Officers	Director Incharge
Advance course on Chemical Safety	Director Incharge

INDOSHNET

Ministry of Labour, 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 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 for proforma of organisational profile to Director General, DGFASLI, Central Labour Institute Bldg., N.S. Mankikar Marg, Sion, Mumbai 400 022.

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

NATIONAL REFERRAL DIAGNOSTIC CENTRE

Early detection and diagnosis of occupational health disorders and occupational diseases is one of the most important factors in the prevention and control of adverse health effects on workers due to various factors - physical, chemical, biological and psycho-social. The Industrial Medicine Division of Central Labour Institute, Mumbai runs a National Referral Diagnostic Centre (N.R.D.C.) for early detection and diagnosis of occupational diseases and recommends necessary measures for prevention/control of occupational health problems/occupational diseases. The diagnostic centre is well equipped for medical examination of the exposed workers and facilities are available for carrying out special investigation, e.g. Pulmonary function tests, Audiometry, ECG, Titmus vision test, Biological monitoring, etc. Medical professionals including Factory Medical Officers, ESI Doctors, Medical Inspectors of Factories and Certifying Surgeons, Doctors from Medical Colleges and Hospitals can refer suspected cases of occupational diseases to N.R.D.C. for diagnosis and advice. The communication should be addressed to the Director General, DGFASLI, Central Labour Institute Bldg., N.S. Mankikar Marg, Sion, Mumbai 400 022 for further details.

INOSHNEWS 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. No photographs can be published.**

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.**

GOVERNMENT OF INDIA, MINISTRY OF LABOUR
DIRECTORATE GENERAL FACTORY ADVICE SERVICE & LABOUR INSTITUTES

The Directorate General Factory Advice Service & Labour Institutes (DGFASLI) is an attached office of the Ministry of Labour, Government of India. DGFASLI organisation 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

The Central Labour Institute in Mumbai functions as a socio-economic laboratory and is a national institute dealing with the scientific study of all aspects of industrial development relating to the human factors.

Over the past 33 years the Central Labour Institute has constantly grown not only in size but also in stature and has earned national and international recognition. It has been recognised by the International Labour Organisation as a Centre of Excellence in training on Occupational Safety and Health in the Asian and Pacific Region. It also functions as a National Centre for CIS (International Occupational Safety and Health Information Centre) and the Centre for National Safety and Health Hazard Alert System. At the national level, apart from providing research and training support to the Government and functioning as a technical arm of the Ministry of Labour, the institute provides comprehensive and multi-disciplinary services to the Industrial Port sector through studies, technical advice, training and dissemination of information. It also runs National Referral Diagnostic Centre for early detection of occupational disorders and thereby controls and prevents them. It has a modern Audio Visual Studio fully equipped with sophisticated video production equipment to produce quality U-matic video films on Safety and Health. The Regional Labour Institutes are a scaled-down version of the Central Labour Institute and cater to the needs of their respective regions.

The organisation 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 organisation 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