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### **FROM THE DESK**

Wealth can be generated even from the wastes by the use of appropriate technology is a well accepted proverb. Animal wastes especially the skin and hides have been processed in the country for ages by the tannery units and variety of leather goods have come to the market. It is the leather goods industry which after globalization and opening up of international trade and commerce have been contributing to earning of foreign exchange for the country. The potential for earning of foreign exchange by the country through export of leather goods is very high since our country has the largest cattle population in the world. However, it is also necessary to have ISO Certification or OSHA standards of safety and health if leather industry desire more business in the world market. Therefore it is necessary that tanning workers are provided with safe and healthy work environment through appropriate Safety, Health & Environment measures. . It is also necessary for them to ensure that the wastes generated by these industries are adequately treated to me them innocuous before disposal so as to protect the general environment.

The cover feature of this issue discusses the various occupational health and safety problems that are encountered in the tanneries of the country including the risks involved due to tanning wastes contaminating the environment. The issue also details some of the essential safety and health measures necessary to ensure safe and healthy work environment to the tanning workers so also a safe general environment to the general public. I hope the tanning and leather industry will take advantage of this solutions provided in this cover feature to safeguard the health and safety of their workers and the public at large.

A handwritten signature in blue ink that reads "S.K. Saxena". The signature is written in a cursive style and is underlined with a single blue line.

**(S.K. SAXENA)**

**EDITOR –IN- CHIEF**



# OCCUPATIONAL HEALTH HAZARDS IN TANNERIES

Dr. R B Raidas

## INTRODUCTION

The various production processes in Tanning industry pose many hazards to the health of its employees. Toxic chemicals such as Hydrogen Sulphide, Chromium, Bleaching agents, disinfectants, dyes and physical and biological agents like Anthrax are a few to mention. Their effects vary from minor irritation while working to serious and disabling diseases. Tanning industry is also identified as hazardous and it is included in Schedule I of the Factories Act amended in the year 1987.

Available data indicate that there are over 2000 Tanneries in the Country excluding cottage scale units. If Small Scale Tanneries are also included, the number of Tanneries may go beyond 2100. This indicates that the number of employees exposed to the risk of health hazards is quite large.

As per the available information and few publications, the occupational health problems encountered in tanneries of our Country can be detailed as under.

## HEALTH HAZARDS DUE TO DUST

Dusts of vegetable tanning materials, lime, and leather are generated in many operations carried out in tanneries. It is known that the main exposures to these dusts occur around Rotating drums, at shaving and buffing machines. The most common morbidity as a result of dust exposure is reported to be CHRONIC BRONCHITIS. There is no TLV (threshold limit value) laid down for leather dust and the concentration of the

dust varying between 4-24 million particle/cubic ft. was found in a study<sup>2</sup> conducted in Tanneries of northern parts of our country. There is no evidence to suggest an association between Leather Tanning and Nasal Cancer. Cancer of the lung, larynx, buccal cavity, pharynx and kidney in leather industry is only reported by hypothetical generating surveys.

Lime dust is non-toxic. Inhalation of lime dust does not produce pneumoconiosis. The only effect on respiratory tract is irritation. It is important to remember that lime dust will have serious consequences if proper eye protection is not used. This is because it is known to cause corneal ulceration, opacity and symblephron of the eyes.

## GASING

Risk of exposure to H<sub>2</sub>S gas is reported especially during cleaning out of tanning pits if strict precautions are not undertaken. The main source of this chemical asphyxiant gas is the decomposition and degradation of Sulphur containing protein of tanned waste. The gas remains dissolved in tan pits and the gas is released in high concentration into the atmosphere if this tan liquor is stirred. The TLV of H<sub>2</sub>S gas is 10 PPM. At lower concentration of about 200 PPM, morbid symptoms like watering of eyes, sneezing, sore throat, headache, giddiness and loss of energy are produced. At 1000 PPM, the gas produces asphyxia and the exposed person drops dead like a hot potato.

## ANTHRAX

It is a disease caused by a biological agent *Bacillus anthracis*. Infection to the workmen occur when the infected hides or skins are handled when the Anthracis spores find their way through skin abrasions resulting in skin ulcerations commonly known as cutaneous anthrax or Malignant pustule. Inhalation of spores does occur rarely and the worker may develop Hemorrhagic Pneumonia of Lungs known as pulmonary anthrax. It is a fatal disease. Anthrax is a notifiable disease under the Factories Act. It is also a compensable disease prescribed under Workmen's Compensation and ESI Acts. Risk of contracting the disease is more likely during operations such as Handling, Transferring, Curing, Soaking, Trimming, and weighing of infected hides and skins.

## **SKIN PROBLEMS**

Chrome ulceration is specific skin lesions caused as a result of direct contact with Trivalent or Hexavalent chromium compounds and is especially observed among chrome tanners. The affected workmen have painless, multiple ulcers or holes on the skin of the exposed parts of the body, especially hands and feet.

In a study conducted in Tanneries of Northern parts of our country, the prevalence of ulcers of fingers and toes among chrome tanners was found to be 10.6%. Like Anthrax, Chrome ulcer of the skin is also a notifiable disease under the Factories Act. It is a compensable disease as well.

### **Dermatitis**

Many types of chemicals are used in different stages of tannery operations which include lime, disinfectants, bleaching agents and dyes. The most viable condition that aggravates the risk of developing dermatitis is the constant

wetting of the skin. That is why in the study<sup>3</sup> conducted in Northern India those workmen engaged around soaking operations were found to be maximally affected (10.46%) with dermatitis, even though the overall prevalence among tannery workers was only 3.18%.

### **Callosities**

Callosities (thickening of skin at pressure points), especially of shoulder and palm is caused due to repeated pressure and motion effects while the hides and skins are handled and transported manually by the workers. It can also be caused by the use of hand tools. The prevalence rate of callosity of hands and shoulder in a study indicated above was found to be 7%.

### **Leucoderma**

Leucoderma i. e. white patch on the skin is reported among the tannery workers but the cause of this disorder was due to wearing of rubber gloves and boots containing mono-benzene as anti-oxidant. The common site of leucoderma is hands and feet.

## **INJURIES**

Fatal injuries by drowning and scalds are reported in Tanneries. This is due to wet, greasy, slippery floor and unfenced pits and vats. The risk is further increased due to poor illumination of work rooms. Finger injuries are common especially when fleshing and dehairing operations are carried out manually using sharp long knives.

## **HAZARDS OF UNTREATED EFFLUENTS**

The liquid wastes from Tanneries have

high pH and alkalinity. It also contains toxic chemicals like chromium, arsenic, lime etc. It was noticed that tannery waste could cause choking of corporation sewers also. The waste is toxic to fish and aquatic life. Bathers may get anthrax if the tanning waste is discharged into rivers without appropriate treatment.

## **PREVENTION & CONTROL**

- Efficient exhaust ventilation should be provided at the point of dust generation especially at buffing and shaving machines and at rotating drums.
  - More frequent replenishing of tanning liquor is required during hot weather to prevent its putrefaction and generation of H<sub>2</sub>S gas.
  - Tests for toxic gases like H<sub>2</sub>S to be made before workers are permitted to enter tan pits and the worker must wear respiratory protective devices and safety belts attached to a rope, the free end of which is held by a person standing outside. These precautions are essential and obligatory on the part of management as prescribed under Section 36 of the Factories Act.
  - The raw hides and skins should be disinfected using proper disinfectants before processing those for tanning.
  - Suitable barrier creams and lotions for application on the exposed body parts before start of work to be provided to the workmen. This will help in preventing occupational dermatitis and chrome ulceration.
- Impervious long gloves made up of either washable leather or fabric lined rubber, sleeves, aprons and boots of impervious material to be worn by the workmen to avoid direct contact with chemicals.
  - Separate cloakroom facilities for out-door clothing and work clothing with interposed adequate washing facilities are the arrangement of choice for tannery workmen.
  - Display of precautionary notices in each department against risk of occupational injuries and diseases in a simple lucid language would be of great help to the workers. The display should include especially the following:
    - Prohibition of eating in the workrooms.
    - Washing hands and scrub under the nails before eating.
    - Bleach and strong alkali soaps not to be used for removing dyes from hands.
    - Workers warned against scratching their skin or even touching their faces without cleaning their hands.
    - Workers trained to seek immediate first-aid for injuries and to report any signs of anthrax at once.
  - Adequate first-aid facilities to be provided and the workers trained in first-aid especially with respect

to:

- Artificial respiration
- Emergency care for eye problems due to lime dust.
- First-aid for injuries.
- Training of workers to use the facilities for even slight abrasions is essential if Anthrax is to be avoided.
- Periodic medical examination of workers once in 6 months is to be carried out by a qualified medical officer trained in occupational health. The medical records of workers are to be maintained and updated as specified in the relevant model rules under the Factories Act.
- Isolation of cases of chrome ulceration and occupational dermatitis is necessary to prevent aggravation of the diseases.
- Adequate lighting in the workrooms to be provided to reduce chances of accidental injuries.
- Lastly, the tannery wastes must be adequately treated and the effluent should be rendered innocuous before being discharged into the drain. This is also one of the statutory requirements prescribed under the Factories Act.

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# THE METHOD OF CHECKING THE EFFECTIVENESS OF EAR-DEFENDERS

P. B. Pal, Director (Industrial Hygiene)

## INTRODUCTION

The industrial management provides the ear protectors to the workers who are exposed to high noise at the work places. The safety officer or the person responsible for the safety of the workers will procure and provide the ear protectors of maximum efficiency to the exposed persons. The safety personnel would generally ask the manufactures/supplier to supply the ear protectors having maximum attenuation say about 25 to 30 dB or even more without considering frequency spectrum of the existing noise of the work place. While conducting surveys in industries, it was observed that at many work areas where noise levels were at the tune of 100 dB (A), the ear-muffs have been provided to the workers. Technically it is not a correct procedure for providing ear protection. Although the ear-muffs can give maximum attenuation, it will not be used by the workers for longer period because of its heavy weight. The ear- muffs should be given in those work areas where noise of very high intensity prevails for a short duration. Further, it is not necessary that ear-muffs will attenuate the sound of all frequencies equally.

Therefore, it is necessary that we should know the frequency spectrum of our work areas in order get the information about those high sound intensity frequency bands which need reduction. Having this knowledge, we can select an appropriate hearing protector from the market. Instead of asking total attenuation of the ear protector, we should ask the manufacturer/suppliers the mean attenuation and standard deviation of the ear protector at different frequency-bands. From this information, hearing- protectors' noise reduction ratings can be found out. If the resultant reduction is 90 dB (A), it is an effective hearing protector. If the resultant reduction is more than 90 dB (A), then the ear-protector will not be effective. We should choose other effective ear defenders. This has been illustrated in the following discussions.

## ATTENUATION DATA OF EAR DEFENDERS

Various types of ear-plugs or muffs are available in the market specifying their Mean attenuation and Standard Deviation (SD) at different frequency-bands. For example a foam-plug whose attenuation is given below:

**Table 1: Attenuation in dB of Foam Plug at Different Frequency Band**

| Frequency Band (Hz) -> | 63   | 125  | 250  | 500  | 1000 | 2000 | 4000 | 8000 |
|------------------------|------|------|------|------|------|------|------|------|
| <i>Foam plug</i>       |      |      |      |      |      |      |      |      |
| Mean Attenuation       | 24.8 | 26.1 | 26.7 | 28.9 | 30.4 | 32.8 | 43.6 | 44.4 |
| Standard Deviation     | 7.3  | 7.8  | 7.4  | 7.0  | 5.9  | 4.9  | 5.0  | 5.5  |

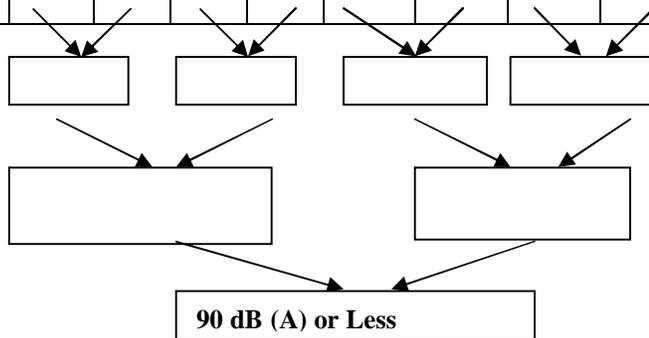
## EAR PROTECTOR'S RATING FORM

The format developed by the Acoustic experts of America and the European

countries can be used to find out the resultant attenuated dB (A) of a hearing protector which is given below:

**Table 2: RATING FORM**

| Frequency Band at Center Freq.( Hz)           | 63  | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
|-----------------------------------------------|-----|-----|-----|-----|------|------|------|------|
| SPL, (dB) at worker's ear                     |     |     |     |     |      |      |      |      |
| (2) Ear protector's mean attenuation in dB    |     |     |     |     |      |      |      |      |
| (3) Ear- protector's standard deviation in dB |     |     |     |     |      |      |      |      |
| (4) Effective attenuation(2) – (3) = (4)      |     |     |     |     |      |      |      |      |
| (5) Attenuated spectrum(1) – (4) = (5)        |     |     |     |     |      |      |      |      |
| (6) Correction for A-weighting                | -26 | -16 | -9  | -3  | 0    | +1   | +1   | -1   |
| (7) Corrected spectrum (5) + (6) = (7)        |     |     |     |     |      |      |      |      |
| (8) Assemble in descending order + add        |     |     |     |     |      |      |      |      |



## METHODOLOGY

First step is to measure the sound of various work locations and identify the locations where the sound pressure levels are 90 dB (A) or more. Thereafter, the

Octave Band Analysis of each of such locations should be carried out. For example, the observed noise level in a Ball Mill of an Alumina Reduction Plant is given below:

**Table 3: Frequency Spectrum of the Sound of Ball Mill Area**

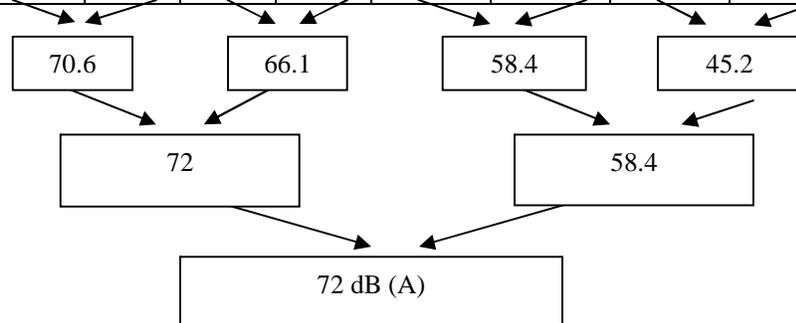
| Frequency Band (Hz) ->        | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000      |
|-------------------------------|----|-----|-----|-----|------|------|------|-----------|
| (1) SPL, (dB) at worker's ear | 92 | 92  | 95  | 95  | 93   | 91   | 83   | <b>71</b> |

Now, putting the attenuation data of the ear protector in Ear Protector's Rating

Form, its effectiveness could be worked out as explained below:

**Table 4: Attenuated Sound Levels of Ball Mill Area**

| Frequency Band (Hz)                           | 63         | 125        | 250        | 500        | 1000       | 2000       | 4000       | 8000       |
|-----------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| (1) SPL, (dB) at worker's ear                 | 92         | 92         | 95         | 87         | 93         | 91         | 83         | 71         |
| (2) Ear protector's mean attenuation in dB    | 24.8       | 26.1       | 26.7       | 28.9       | 30.4       | 32.8       | 43.6       | 44.4       |
| (3) Ear- protector's standard deviation in dB | 07.3       | 07.8       | 07.4       | 07.0       | 05.9       | 04.9       | 05.0       | 05.5       |
| (4) Effective attenuation(2)-(3) = (4)        | 17.5       | 18.3       | 19.3       | 21.9       | 24.5       | 27.9       | 38.6       | 38.9       |
| (5) Attenuated spectrum say-(1) - (4) = (5)   | 74.5<br>74 | 73.7<br>74 | 75.7<br>76 | 65.1<br>65 | 68.5<br>68 | 63.1<br>63 | 44.4<br>44 | 32.1<br>32 |
| (6) Correction for A-weighting                | -26        | -16        | -9         | -3         | 0          | +1         | +1         | -1         |
| (7) Corrected spectrum (5) + (6) = (7)        | 48         | 58         | 67         | 62         | 68         | 64         | 45         | 33         |
| (8) Assembled in descending order +Add        | 68         | 67         | 64         | 62         | 58         | 48         | 45         | 33         |



Since the resultant attenuation is 72 dB (A), which is less than 90 dB (A), this is an effective hearing protector. In this way, we can find out the effectiveness of other protectors supplied by the manufacturers.

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# **INVESTIGATION OF AN ACCIDENT OF EXPLOSION IN THE SODIUM CHLORATE STORAGE ROOM OF A PAPER AND BOARD MANUFACTURING INDUSTRY**

This study was carried out by Regional Labour Institute, Kanpur.

## **INTRODUCTION**

An investigation of an accident of explosion in the sodium chlorate storage room of a paper and board manufacturing industry was carried out. The accident took place in the factory on 1st May, 2006 resulted in 2 deaths and 9 injuries.

## **METHODOLOGY**

The methodology of the investigation included inspection of the site, interview with plant personnel and perusal of related documents to find out the reason of accident and suggesting the measures to prevent such accidents in future.

Sodium chlorate was being used in the factory for the generation of chlorine dioxide gas, which in turn was used for bleaching of pulp. It was being stored in a warehouse in which the fire and explosion had occurred.

The factory was having a dedicated storage warehouse of about 12.5 M X 7.5 M to store 50 MT of sodium chlorate. The factory initially had license for storing 50 tones of sodium chlorate which was valid till 31.03.05. It was renewed from time to time and the licensed capacity of the storage was enhanced from 50 MT to 150MT on the 20th April, 2006 by the

office of the District Magistrate. The storage room was located at the extreme end of the road running along the husk yard. It had a concreted roof and a rolling shutter without any window.

During the accident, the storage room and switch room of the pump house, which were situated in the northern side of the warehouse got completely damaged. Sodium chlorate scattered along with the debris of the storage room scattered in different directions of the factory and caused injuries /deaths due to physical impacts of the bricks /concrete blocks ejected from the accident site. The straw yard and bagasse yard also caught fire at the time of accident. The post mortem report of most of the persons died during the accident indicated death due to shock and haemorrhage as a result of anti mortem injuries. It was reported by the management that the District Administration took control over the site and subsequent operations were carried out under its directions. The emergency plan had been prepared and updated by the management but the persons in the plant were not aware of it.

The storage room was not having free area around it as required under the applicable statute and related standards. The switch room of the water storage and treatment plant was situated too close to the storage room. The bagasse/ straw yard situated just adjacent to the sodium chlorate storage room gave rise to a lot of straw and bagasse fibres and dust and thus were possibly present in the sodium chlorate storage room. There was no practice of 'permit to work' system even for maintenance jobs in the hazardous areas like sodium chlorate storage

## **RECOMMENDATIONS**

Based on the circumstances, it was concluded that the accident could have occurred by fire in the sodium chlorate storage room initiated by heating up of some explosive mixture or combustible substance. The mixture of grease and the sodium chlorate deposited in the rolling shutter frame would have initiated the fire and explosion on getting heated up by welding sparks or the sparks formed due to jump of current. The other combustible materials present in the room would have been straw / bagasse fibres, and the plastic bags used for packing of the sodium chlorate, which could have been the cause of the ultimate explosion that had destroyed the whole room. It was recommended that all the statutes concerned with the licensing and ongoing inspection of the sodium chlorate storages should be updated and the users of sodium chlorates should ensure that the systems were based on the latest available standards and codes of practices and should strictly observe the applicable statutes and the terms of license for the storage and handling of sodium chlorate.

# **CONCEPT OF OCCUPATIONAL PHYSIOLOGY, ITS APPLICATION IN INDUSTRY FOR PROMOTION OF SAFETY, HEALTH & PRODUCTIVITY AT WORK AND INDUSTRIAL FATIGUE, IT'S EVALUATION & MANAGEMENT FOR IMPROVING SAFETY, HEALTH & INCREASED PRODUCTIVITY AT WORK**

## **INTRODUCTION**

Occupational physiology is the basis of establishing safe limits of industrial operations observed on human physiological reactions at shop floor. Various physiological systems are responsible for overall human performance.

Human being is composed of various physiological systems which determine man's capacity. It is absolutely essential to learn some basic physiology & its techniques for improving industrial application.

How physiological reactions helps us in deriving safe industrial operations, environmental requirements, man machine interaction on specific job will be covered in the program. The severity of jobs, its safe practice and determination is based on physiological parameters. The perfect human being is composed of physiology & psychology which needs to be addressed to understand these complex factors for improving safety, health & productivity at work.

Industrial fatigue is one of the shop floor hazards from time memorial. The concept of fatigue was very much prevalent during ancient times. Mankind did not know the cause effect relationship for many years. The victims are all industrial workers,

housewives, and any body concerned with productive work. The complex physiological and psychological components of fatigue are still unknown to us. The quantification & nature of fatigue is complex. Because of these problems in shop floor, the control of fatigue is one of the most challenging tasks to the professionals. However, the local fatigues like visual, muscular, cardiovascular, neural and hormonal leads to development of total fatigue in human, which causes the loss of performance capacity. The psychological and physiological fatigue may be local in nature but general fatigue has both the components.

## **OBJECTIVES**

- To familiarize with the physiological factors involved in work place.
- To identify the factors responsible disturbing homeostasis.
- To evolve the easy low cost solutions in both causative factors from engineering & physiological point of view.
- The understanding of the complex interaction of fatigue.
- The identification of the cause-effects relationship of fatigue.
- The differentiation of the psychological & physiological fatigue.

## **HIGHLIGHTS**

- Causes for physiological intervention & identifying causative factors.
- Identification of physical & physiological factors of fatigue.
- Evaluation & Management of fatigue in industry.
- Correlation of fatigue with all factors.
- Discussion of various relevant problems encountered by participants/ organizations etc. (case studies)

## **TECHNIQUES**

- Lecture, discussion based on shop floor experience and case studies.
- Laboratory exercise / demonstration.
- Technical films

## **TARGET GROUP**

Safety Managers/Officers, Plant, Design, Production, Maintenance, Refrigeration, Ventilation Engineers, Dentists, Audiologists, Pharmacists, Policy Planners, Sr. & Middle Management Personnel, Union leaders, Transport & Railway officials, Workers Laboratory Technicians, Plant Supervisors, Plant Medical Officers, ESIC Doctors, Paramedical Personnel, Physical Therapists, and Physio-Therapists, Inspectors of Factories, Academicians, Call Centre & IT Professionals and one and all concerned with occupational health.

## **FACULTY**

Experts from Central Labour Institute, Mumbai and a few guest speakers who have specialized knowledge.

## **Conducted by:**

**INDUSTRIAL PHYSIOLOGY &  
ERGONOMICS DIVISION  
CENTRAL LABOUR INSTITUTE  
Sion, Mumbai – 400 022**

**MATERIAL SAFETY DATA SHEET  
ON SODIUM TARTRATE**

Synonyms: SAL tartar; disodium tartrate;, dihydrate; 2,3 dihydroxy-[R-(R\*, R\*)]-, disodium salt, dihydrate butanedioic acid

## **HAZARDS IDENTIFICATION**

### Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

## **POTENTIAL HEALTH EFFECTS**

The human health effects from exposure to this substance are not known.

Inhalation: May cause mild irritation to the respiratory tract.

Ingestion: Large oral doses may cause gastrointestinal disturbances.

Skin Contact: May cause mild irritation.

Eye Contact: May cause mild irritation.

Chronic Exposure: No information found.

Aggravation of Pre-existing Conditions: No information found.

## **FIRST AID MEASURES**

Inhalation: Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion: Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.

Skin Contact: Wash exposed area with soap and water. Get medical advice if irritation develops.

Eye Contact: Wash thoroughly with running water. Get medical advice if irritation develops.

## **FIRE FIGHTING MEASURES**

Fire: Slight fire hazard when exposed to heat or flame.

Explosion: Not considered to be an explosion hazard.

Fire Extinguishing Media: Use any means suitable for extinguishing surrounding fire.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face-piece operated in the pressure demand or other positive pressure mode.

## **ACCIDENTAL RELEASE MEASURES**

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8.

Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

## **HANDLING AND STORAGE**

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against

physical damage. Isolate from any source of heat or ignition. Isolate from oxidizing materials. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

## **EXPOSURE CONTROLS/PERSONAL PROTECTION**

Airborne Exposure Limits: None established.

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

Personal Respirators (NIOSH Approved): For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection: Wear protective gloves and clean body-covering clothing.

Eye Protection: Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

## **STABILITY AND REACTIVITY**

Stability: Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products: May produce acrid smoke and irritating fumes when heated to decomposition.

Hazardous Polymerization: Will not occur.

Incompatibilities: Strong oxidizers.

Conditions to Avoid: Heat, incompatibles.

## **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.**

## **INTERNATIONAL OCCUPATIONAL SAFETY AND HEALTH INFORMATION CENTRE (CIS)**

CIS (from the French name, Centre International d'information de sécurité et d'hygiène 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)
- ILOCIS 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: Information Networking**

### **CIS ACCESSION NUMBER**

CIS 03-143

### **ABSTRACT**

This issue is primarily devoted to the theme of networks for the sharing and exchanging of occupational safety and health (OSH) information. Main topics covered: information networking as an

effective way to prevent hazards; OSH networks in the Asian-Pacific region; electronic repository on OSH information for the Asian-Pacific region; OSH information network in China; review of a conference on OSH information held in Finland; review of a workshop on occupational health in small enterprises held in Thailand; presentation of a health information programme on ageing and work in China; health information resources in India; OSH information networks of the WHO; Internet as a tool for the diffusion of OSH information.

### **NOTE**

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

## **HOUSES NEAR HAZARDOUS UNITS LIKELY TO BE SHIFTED**

Residential colonies near 1,666 big industrial units across the country using hazardous chemicals as raw materials may have to face relocation with the government expected to consider a proposal to create a "buffer zone" which will mitigate the effects of a Bhopal-type accident.

The National Disaster Management Authority (NDMA) has suggested legislation on a 'buffer zone' around such industries with a radius of 1.5-5 km. Although most of the big hazardous industries like petrochemical, cement, fertiliser and oil refining do not have residential colonies in their vicinity, the law, if enacted, will leave no chance to have residential areas around such units.

The proposal to have the 'buffer zone' is a part of the NDMA's guidelines on chemical disasters which is to be handed to the ministry of environment and forest (MoEF) on Monday. The Ministry will come out with a detailed action plan to implement it at the national level in a time-bound manner.

One of the members of NDMA, who has been instrumental in framing the guidelines, told that the suggestions would go a long

way in ensuring prevention, mitigation, preparedness, capacity building and swift response to chemical disasters across the country. He also said that unlike earthquakes, floods or tsunamis, chemical disasters are preventable if certain measures are taken in advance.

Other industries which come under the category of 1,666 major accident hazard (MAH) units include glass, ceramics, explosives, paints, halogens and halogenated compounds, industrial gases like nitrogen, hydrogen and sulphur dioxide, rubber, leather, drugs and pharmaceutical, among others.

Besides advocating buffer zones, the guidelines also suggest strict provisions to penalise defaulter units after inspection by an expert technical committee. It also talks about empowerment of factory inspectorates to take legal action for non-compliance of rules.

**Source: The Times of India, Mumbai  
Edition, Published on 28.05.2007.**

### **TRAINING PROGRAMMES JULY-SEPTEMBER 2007 CENTRAL LABOUR INSTITUTE, SION, MUMBAI-400 022**

| Programme title                                                                                            | Contact person                              |
|------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Heat Stress & Ventilation - its Evaluation & Management for ensuring Safety, Health & Productivity at Work | Director(Physiology) & In-charge Physiology |
| Industrial Safety for NSC, Maharashtra Chapter                                                             | Director(Safety) & In-charge Safety         |
| Safety, Health & Environment Management                                                                    | Director(Indl.Hygiene) & In-charge          |

|                                                                                                     |                                                                 |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| in Process Industries                                                                               | MAHCA                                                           |
| Effective Supervision for Results                                                                   | Director (Staff Trg./Prod.) & In-charge Staff Trg.              |
| Workshop on Environmental Management System                                                         | Director(Incl.Hygiene) & In-charge Env.Eng.Division             |
| Making Safety Committee More Effective                                                              | Deputy Director (Incl. Psychology) & In-charge Incl. Psychology |
| Testing & Examination of Lifting Machines & Pressure Vessels                                        | Director(Safety) & In-charge Safety                             |
| Industrial Fatigue, its Evaluation & Management for Improving Safety, Health & Productivity at Work | Director (Physiology) & In-charge Physiology                    |
| One month Specialized Certificate Course for Supervisors working in Hazardous Process Industries    | Director (Staff Trg./Prod.) & In-charge Staff Trg.              |
| Basic course for Inspectors of Factories                                                            | Director (Safety) & In-charge Safety                            |
| Advanced Training Programme on Occupational Health & Environmental Medicine for Medical Officers    | Director (Ind.Medicine) & In-charge Ind.Medicine                |
| Occupational Back Pain its Evaluation & Management for enhancing Safety, Health & Productivity      | Director (Physiology) & In-charge Physiology                    |
| Workshop on HAZOP                                                                                   | Director (Incl.Hygiene) & In-charge MAHCA                       |
| Selection and Quality Assurance for effective use of PPE                                            | Director (Incl.Hygiene) & In-charge Incl.Hygiene                |

**TRAINING PROGRAMMES JULY-SEPTEMBER 2007**  
**REGIONAL LABOUR INSTITUTE , NO.1,SARDAR PATEL ROAD**  
**ADYAR, CHENNAI-600 113**

| Programme title                             | Contact person     |
|---------------------------------------------|--------------------|
| Diploma in Industrial Safety                | Director In-charge |
| Safety Audit                                | Director In-charge |
| Major Accident Hazard Control in industries | Director In-charge |

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**TRAINING PROGRAMMES JULY-SEPTEMBER 2007**  
**REGIONAL LABOUR INSTITUTE , LAKE TOWN, KOLKATA-700 089**

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| Programme title                                             | Contact person     |
|-------------------------------------------------------------|--------------------|
| Diploma in Industrial Safety                                | Director In-charge |
| Workers Development Programme                               | Director In-charge |
| Appreciation course on Industrial Hygiene                   | Director In-charge |
| Advanced Training Programme on Occupational Safety & Health | Director In-charge |
| Chemical Safety                                             | Director In-charge |
| Emergency Planning & Preparedness in MAHC Installation      | Director In-charge |

**TRAINING PROGRAMMES JULY-SEPTEMBER 2007**  
**REGIONAL LABOUR INSTITUTE, SARVODAYA NAGAR, KANPUR- 208 005**

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| Programme title                                              | Contact person     |
|--------------------------------------------------------------|--------------------|
| Diploma in Industrial Safety                                 | Director In-charge |
| Chemical Hazards in Industry                                 | Director In-charge |
| Testing & Examination of Lifting Machines & Pressure Vessels | Director In-charge |
| Safety & the Law                                             | Director In-charge |
| Workshop on Safety Engineering & Management                  | Director In-charge |
| Prevention & Control of Fire in Industry                     | Director In-charge |
| Effective Supervision for Safety & Health at Work            | Director In-charge |

## INDOSHNET

Ministry of Labour & Employment, Government of India, is developing a National Network on Occupational Safety and Health information system known as INDOSHNET. Directorate General Factory Advice Service & Labour Institutes (DGFASLI), an attached office of the Ministry of Labour will act as a facilitator of the network system. The objective of the network is reinforcement and sharing of national occupational safety and health (OS &H) information on 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.



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

- 1. Manuscripts for publication should be typed in double space within 3 to 4 A4 size sheets only on one side of the paper and sent in duplicate to the Editor-in-Chief. 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 & EMPLOYMENT  
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 & 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

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 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 recognized by the International Labour Organization 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 organization is poised to grow further, and meet the increased demands on it. In a developing country with a large number of industries having diverse and complex nature, the task of protecting safety and health of workers is an uphill task. Armed with the technology, good will of the industrial society and the strength of the dedicated staff, the organization is well prepared to meet the challenges of tomorrow. It is committed to the goal of making the workplace safer.

Visit us at : [www.dgfasli.nic.in](http://www.dgfasli.nic.in)