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Contents

PROMOTION OF SAFETY & HEALTH IN SMALL SCALE INDUSTRIES

A.K. DUBEY*

ROLE OF SMALL SCALE SECTOR IN INDUSTRIAL DEVELOPMENT

Recognising the self-employment potential of small scale industries and the fact that rich skill and craftmanship was abundantly scattered throughout the length and breadth of the country, the Industrial Policy Resolution of 1948 assigned the development of village and small scale sector, a prime place in the industrial development of our country.

In pursuance of the above, the Government initiated a number of steps to promote the growth of small scale units. These include provisioning of sheds, technical guidance, various liberalised loan assistance schemes, incentives, subsidies, concessions and training. These attracted many enterprising individuals who came forward and set up small scale units. All this led to a continuous growth of small scale sector both in terms of size, diversification of manufacturing areas and in use of technology. As a result, small scale sector today occupies an important place in the overall industrial scenario of the country – almost 40% of the total national industrial output comes from this sector. This sector contributes over 25% to the total exports. Well over one crore personnel are employed in small scale units in the country.

From the foregoing, it is evident that what began as decentralised, individual initiatives at the unit level has now blossomed into a large scale people's movement fulfilling the objectives of Industrial Policy Resolution for the small sector, viz., deconcentration of economic power within the community, decentralisation of industrial development, creation of large scale employment opportunities, utilisation of local resources, & prevention of disorganised urbanisation.

STATUS OF HEALTH & SAFETY IN SMALL SCALE UNITS

The growth in small scale sector is largely attributable to the Government promotional policies, provision of facilities which focussed on providing various types of assistance for setting up of units, production and growth. However, the aspects of safety & health in the small scale units hardly received any attention till the VIth Five Year Plan. As a result, the working conditions in most of the small scale units are far from satisfactory posing thereby great risk to the health and safety of the personnel working therein. Further, this threat to employee safety is increasing manifold due to more and more units being set up involving hazardous processes and substances, employing moderately sophisticated operations. The reasons for the present state of affairs can be summarised as below :

a) The units are mostly one man management
b) Lack of resources
c) Lack of knowledge regarding safety aspects

One Man Management

As per a random sample survey carried out by DCSSI in late Eightees 96% of the small scale units had investment in plant and machinery below Rs.5 lakhs, 90% had investment below Rs. 2 lakhs and 70% had below Rs. 50,000. Thus only 4% to 5% of units had investment in plant and machinery above Rs. 5 lakhs (Laghu Udyog Samachar, Dec. 1988). It can thus be deduced, that most of the units are small in size and are managed by one individual who has to do all

the jobs, viz. purchase, planning, marketing, accounting, supervising, production, liaisoning with all agencies etc. himself and employing few persons for manufacturing. The entrepreneur thus is spending his time running from pillar to post

to keep the show on. It is therefore no wonder that he gets no time for thinking about safety. All his concern will be for maintaining production only.

Lack of Resources

The small scale units mostly suffer from lack of resources, be it finance, space or manpower. In case of finance, it is mostly a hand to mouth situation and most of the time is spent in arranging for the same. A large number of sick units bear testimony to this fact. Lack of space is particularly applicable to units based in urban areas. Manpower employed, due to financial constraints is limited to unskilled or semi-skilled labour.

The result of all this is the unsatisfactory working condition prevailing in the units. One can witness persons working in a Foundry Unit pouring hot metal in the moulds bare footed and without using any other Personal Protective Equipment for eye and skin protection. In many units, be it chemical, engineering or die casting, workers can be seen operating machines without any PPE. Many hazardous processes are being carried out without any adequate safety measures. Hazardous substances are not stored properly due to lack of facilities. Spray painting operation is carried out without the use of proper PPE. In most of the cases, this is because of lack of finance. Lack of space results in improper storage and stacking, insufficient ventilation, concentration of fumes in the work area and bad house keeping which are potential hazards for health and safety of personnel.

As regards the aspect of manpower, several jobs which demand a certain degree of knowledge and skill are being performed by

less skilled persons due to constraints of finance, which is again a potential risk to safety. It is thus obvious that the resources and expertise available with the small units are much less than those in large companies making it difficult for them to attain satisfactory working conditions.

Lack of knowledge regarding health & safety aspects

One of the important reasons for poor working conditions in small scale units is lack of relevant training and information on safety and health aspects. To set up a unit, all that an entrepreneur has to do is to prepare a technically feasible and economically viable scheme that can ensure governmental assistance. The individual may not possess adequate technical knowledge regarding the process, hazards involved, safety measures required etc. Government agencies assist the entrepreneurs in competence building in technical areas by way of training conducted by institutes, viz. SISI, NSIC, etc. Acquiring safety information and training does not form a pre-requisite for setting up a unit by the entrepreneur. The result of this is the entrepreneur is unaware of safety provisions and the ill effects of poor working conditions. He thus develops an indifferent attitude towards safety and health. It is only when an untoward incident/accident occurs and his productivity is affected that he wakes up. This indifferent attitude towards safety is largely responsible for viewing even a small expenditure for safety measures like PPE, training workers etc. as waste, eating away their valuable finance.

STEPS TAKEN BY GOVERNMENT AND INTERNATIONAL LABOUR ORGANISATION

Even though the need for improvement of working conditions existed for long, it was only in 1981 that concrete efforts were made

in this direction jointly by the Government of India and the International Labour Organisation. The Government of India and International Labour Oreganisation undertook an experimental project in the Sanatnagar Industrial Estate, Hyderabad during November, 1981. This was aimed at identifying the methodology which could be adopted in making an effective intervention

for providing ideas, guidance and assistance to the small scale units for improving their working conditions and productivity. Subsequently five more such pilot projects were conducted at Mumbai, Tamil Nadu, Karnataka (Two) and Noida till the end of 1987.

These projects were part of the International programme for the improvement of working conditions and environment (PIACT) launched by the ILO in 1976. The ILO had conducted similar projects in many other countries in the Asian region. Based on the experience of these projects, the ILO developed a methodology that emphasizes training methods which build upon local experiences and involve the participants in action learning. It is built on the spread of positive ideas and practices from one entrepreneur to another rather than on criticism.

The training strategy takes into account the specific problems and requirements of the Small Scale Industries and recommends observing the following principles.

1. They should be based on local practice taking into account the real problems of the enterprise.
2. Focus on achievements, and emphasize on improvements already achieved.
3. Link working conditions with other management goals.
4. Use "Learning by doing" techniques.
5. Encourage exchange of experience between units.
6. Promote workers involvement.

ILO also have brought out two manuals – one for the entrepreneurs known as "Action

Manual" which shows with numerous illustrations and diagrams how to take simple effective low cost action which raises productivity while improving conditions at the work place. The other one is the "Trainers Manual" which explains how to organise and carry out training designs to improve productivity and working conditions in small enterprises.

Intensive Training Workshop

An intensive training workshop of two week duration is conducted for the

owner/managers of small scale enterprises adopting the ILO methodology.

Objective of the Workshop

The objective of the workshop is to make the entrepreneurs identify themselves the possibility of improvement in the areas of Material Storage & Handling, Workstation Design, Productive Machine Safety, Lighting, Control of Hazardous Substances, Work Premises, Welfare Facilities to the Workers and the Work Organisation so as to improve the productivity of the enterprises as well as making the working conditions better by implementing the low cost solutions.

The low cost solutions as said above are worked out by the entrepreneurs themselves as a result of the discussion during the workshop amongst themselves as well as with the faculty members. The presentations made in the workshop are slide based. These slides of positive examples of various aspects detailed above are taken from the participating units. The entrepreneurs learn from each others' positive practices in various technical areas thereby working out low cost solutions to their problems for improving working conditions and productivity. The methodology thus relies on spreading of the positive aspects from one unit to other for emulation rather than highlighting the negative points.

Conduction of the Workshop

The workshop is conducted in the following manner :

First week

The visits to the participating units are made by the faculty members (Technical Officers from DGFASLI organisation) and discussions are held with the Owner/Managers about their work related problems and suggestions made for improvement. Slides are made of the good practices observed in these units in various areas like Material storage & handling etc. as narrated earlier.

Second week

In the second week of the workshop, a checklist exercise is done by arranging a visit to one of the participating units by all the entrepreneurs and making observations there and filling check list by each one of them. For this purpose, a special check list has been devised by ILO. This is followed by technical presentations made by the faculty members on the 8 technical areas with the help of the slides made in the units during the first week. Useful discussion takes place among the faculty members and entrepreneurs and various ideas emerge for the improvement in various technical areas. Only the positive examples are projected and as such the learning takes place by the spread of positive ideas rather than based on the criticism of the negative practices. This is quite motivating to the entrepreneurs. As past experience has shown, a feeling of kin-ship gets created among the entrepreneurs with a desire to help each other in solving problems in future as well.

ACHIEVEMENTS

Two workshops, one at Mumbai and other at Calcutta were organised jointly by ILO and DGFASLI during 1988 each of 2 weeks duration. Both the manuals were made use of in the conduct of these workshops. The new methodology of training evolved by ILO has been quite successful in bringing out the desired results. The training was well received by the participating entrepreneurs who came out with their action plans of effecting many a low cost practical solutions for improving the working conditions and productivity in their organisations . In fact some of these were implemented during the currency of the workshop itself.

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Subsequently, more than 60 such workshops have been organised benefitting over 2000 enterprises at different places in India.

Many of them have implemented various low cost measures as an outcome of these workshops resulting into the improvement of their working conditions and productivity. Recently one such workshop was conducted at Nasik in association with the Director (ISH), Nasik Region on 2nd April, 2000. The workshop was attended by more than 200 participants from various small and medium scale enterprises. This included 32 owner/managers whose units were visited for making the slides.

One day Slide-based Training programme

As a result of the training workshops conducted since 1988 throughout the country, a huge collection of slides of positive examples in 8 technical areas is now available in DGFASLI. Out of these, 200 slides have been selected with a view to make a compendium depicting the numerous positive examples and ideas relating to 8 technical areas described earlier. This compendium then can be made available to a large number of associations of the small scale entrepreneurs who can then make use of it for training their member entrepreneurs.

A one day training programme with the help of these selected 200 slides has been conducted for the small and medium scale enterprises affiliated to the Kalyan-

Ambernath Manufacturers' Association (KAMA) at Dombivli on 29th August, 2000 attended by 24 owner/managers. The programme was highly appreciated by the participants for its usefulness. More such programmes are planned to be conducted in future.

NOISE IN OCCUPATIONAL ENVIRONMENT

Dr. Brij Mohan*

INTRODUCTION

Kanpur is basically an industrial city where textile mills, engineering industries, tanneries, fertiliser, thermal power plant etc. are present. A large number of population of the city is employed in different occupations in these industrial units. The employees in these units are exposed on various physical and chemical contaminants like noise, heat and gases vapours, dust etc.of different chemicals. Noise in particular is existing in some operation or other in every industry and is one of the main physical hazard which induces the hearing losses in working population. Though hearing impairment is slow, it increases with progressive manner and during early stages of its progression, the individual experiences ringing in the ears and familiar sounds seeming dull or muffled. Therefore, unless the person is not aware about the seriousness to these subtle but obvious clues, they go unheeded. Sometimes, people also don't appreciate that excessive noise is a real danger because rarely any physical pain is experienced in excessive noise exposure and even if there is a pain or discomfort it subsidised when noise is stopped.

It is therefore, essential that proper attention on this silent killer in the industries should be given to protect the working population from noise induced hearing losses. The present article is intended to generate awareness among the working population in the industries and the general public on different dimensions of occupational noise exposure particularly about the types of noise exposure, harmful effects. permissible

limits of exposure, noise levels in representative industries, different techniques of reducing noise and hearing conservation programme.

TYPES OF NOISE EXPOSURE

The workers come across three types of noise in different industrial operations;

1. Continuous
2. Intermittent &
3. Impact or Impulsive type.

Continuous noise is defined as noise of constant level where employee is exposed continuously for a period of eight hours. Large number of industrial operations are covered in this category.

Intermittent noise is a broad band sound pressure level several time during a normal working day such as cutting tools, etc.

Impact/or impulse noise is considered to be those variations in noise levels that involve maxima at intervals of greater than one per second. Where the intervals are less than one second, it should be considered continuous noise. This impact/impulse may be repetitive like rivet gun, pneumatic hammer or non repetitive like firing of gun.

HARMFUL EFFECTS OF NOISE

Noise exposure in industries may cause both auditory and non auditory effects on the employees.

Auditory Effects

On intense noise exposure, auditory effect may be temporary or permanent. The temporary hearing loss is also known as auditory fatigue which occurs for short period of time on intense exposure of

noise. Such hearing losses are recoverable after a period of time away from sound.

On prolonged exposure on excessive noise, temporary hearing losses are transformed into permanent hearing losses.Studies reflect that permanent hearing losses caused by noise initially appear in the region of 3000 to 6000 Hz & are most prominent at 4000 Hz. The losses in hearing become greater and are seen in most frequencies on continuous noise exposure (Michael,1987)[1] The studies also substantiate that the hearing sensitivity of factory workers in heavy industries poorer than that of the general population (Anticaglia, 1973)[2].

Non Auditory Effects

Noise on exposure may also result in non auditory effects like interference in speech communication, annoyance and distraction. It has also been reported that it may also reduce output and efficiency of the employee and cause fatigue besides other health disorders (ILO, 1991) [3].

The physiological effects observed among workers exposed to excessive exposure for long periods are rise in blood pressure, an increase in sweating and heart rate, changes in breathing and sharp contraction of muscles over the whole body.

PERMISSIBLE LIMITS OF EXPOSURE FOR OCCUPATIONAL NOISE

Permissible limits of exposure have been prescribed in the Model Rules framed by the Directorate General Factory Advice Service & Labour Institutes (DGFASLI), Ministry of Labour, Government of India under the Factories Act 1948 for continuous noise. These limits are laid down on the basis of the duration of noise exposure at various sound levels in a day.

The permissible limits of exposure emphasise that factories should reduce employees' exposure to noise to the permissible levels by adopting suitable engineering or administrative controls. If these effects are not successful, personal protective equipment must be provided to the workers along with effective Hearing Conservation Programmes in the factory.

The permissible limits of exposure is 90 dB measured with an A frequency weighting for 8 hours exposure and the higher level permitted is 115 dB (A) for 15 minutes. The permissible limits of exposure for noise are presented in Table 1(DGFASLI, 1987)[4].

Table -1

PERMISSIBLE LIMITES OF EXPOSURE FOR CONTINUOUS NOISE

Exposure (continuous or a number of short term exposure per day in hours)	Sound Pressure Level in dB(A)
8	90
6	92
4	95
3	97
2	100
1	102
1/2	110
1/4	115*

*

1. No exposure in excess of 115 dN(A) is to be permitted.
2. For any period of exposure falling in between any figure and the next higher or lower figures as indicated in Column 1 the permissible sound pressure level is to be determined by extrapolation on a proportionate basis.

The permissible limits for impulse noise have not been prescribed in the Model Rules.However American Conference of Governmental Industrial Hygienist (ACGIH)[5] has laid down threshold limit values for impact noise which are presented in Table 2 (ACGIH, 1993). No exposure in excess of 140 decibels peak sound pressure levels are permitted.

Table - 2

THRESHOLD LIMIT VALUES FOR IMPULSIVE OR IMPACT NOISE

Sound Level dB*	Permitted number of Impulses or Impacts per day
140	100
130	1000
120	10,000

*Decibels peak sound pressure level; re 20 uPa.

NOISE EXPOSURE IN INDUSTRIES

The Regional Labour Institute, Kanpur has not conducted any exclusive survey for

assessing the noise levels in the industries of Kanpur city. However, during different advisory and research studies/survey in some of the industries of the city, noise levels were evaluated in occupational environments besides other physical and chemical parameters. In some cases the studies conducted elsewhere in the region are included for discussion with a view to draw the scenario of noise exposure in similar types of industries in Kanpur city.

Textile Mills

There are many areas in textile mills where noise levels are more than permissible limits of exposure i.e. 90 dB(A). A survey conducted in one of the textile mill of Kanpur indicates that level as high as 103 dB(A) was observed in looms and other areas also as presented in Table 3 (Gautam,1998) [6].

Table-3

SOUND LEVELS IN VARIOUS SECTIONS OF A TEXTILE MILL IN KANPUR

Section/Department	Location	Sound Level dB(A)
1. Synthetic card section	Card passage near the machine	94.4
2. Doubling Ring frame (Ground floor)	Near door Between passage	94.4 94.0
3. Ring frames (I floor)	Between machine	94.4
4. Loom Shed (Air Jet Looms)	Near looms Between the centre of looms	90.5 91.6
5. Protective Gear	Between the looms Near the passage	98.0 97.0
6. Looms shed Old looms	Side passage Middle of the shed Between the machines	102.0 103.0 103.0

The data of the survey conducted by American Academy of Ophthalmology & Ototaryngology in textisle industries indicates that the workers in different age groups lost their hearing sensitivity depending on the intensity and period of noise to which they are exposed.

The data of the above survey is presented in Table 4 (Pal & Mohan, 1990)[7].

Table -4
HEARING LOSS BY NOISE EXPOSURE

Age	% of age group with natural loss	Years of Industrial exposure	% of age group suffering loss from regular exposure at		
			85*dB	95**dB	105+dB
25	1.0	5	2.6	12.3	31.7
35	3.1	15	5.0	21.4	49.9
45	7.7	25	6.5	26.7	57.8
55	24.0	35	8.0	28.0	54.0
65	40.0	45	6.5	24.0	44.5

* Typical noise level in carding, winding, drawing
** Typical noise level in high speed spinning and draw twisting
\+ Typical noise level in shuttle loom weaving shed.

Table 4 indicates that a worker with five years of industrial exposure to spinning and draw twist of a textile mill is likely to have 12.3% hearing loss.

Fertiliser

The levels of noise in fertiliser industry have also found to be more than the permissible limit of exposure i.e. 90dB(A) (for 8 hours) . A study conducted few years back indicates that the exposure of noise to the workers of ammonia and urea compressors were as high as 103 dB(A) & 107 dB(A) respectively (Pal & Rajput ,1991)[8] as given in Table 5.

Table -5

SOUND LEVEL AT VARIOUS LOCATIONS OF A FERTILISER UNIT IN KANPUR

Location	Sound pressure level (range), dB(A)
P.S.R. Plant	91-100
Reformer Plant	93-105
Ammonia compressor house	91-103
Urea Plant compressor house	98-107
Refrigeration Plant	90-93
Ammonia storage compressor house	87
Prilling tower area	87-90

Thermal Power Plant

Noise is one of the predominant occupational hazard in thermal power plant. Crusher house and turbine area are the main noisy areas where exposure exceeds the permissible limit. The study in thermal

power plants conducted elsewhere in U.P & M.P. indicates that the levels of noise in crusher house were ranged from 92 dB(A) to 101 dB(A) and in turbine area from 92 to 98 dB(A) (Pal & Mohan, 1995)[9&10] as presented in Table 6.

Table -6

NOISE LEVELS IN THERMAL POWER STATION

Location	Noise Levels in dB(A)
Track Hopper Area	89-91
Crusher House	92-101
Turbine Area	92-98

Engineering Industry

A recent survey conducted in engineering industry revealed that noise exposure of workers in machine shop, engine testing and compressor area were exceeding the permissible limit (Rajput & Dwivedi, 1997)[11] as seen from Table 7.

Table-7

NOISE LEVELS IN ENGINEERING INDUSTRY

Location	Sound Levels dB(A)
Machine Shop	90-94
Engine Assembly	81
Air Compressor room	91
Generator room	94.6
Press Shop	85-91
Engine Testing	92-93

Diesel Generator

Generators of different capacities are installed in almost all industries for generating power in case of emergency. It has been observed that generators are potential sources of noise. The study as seen

from Table 7 indicated that level of noise generator room in one of the engineering industry was 94.6 dB(A). Similarly in other industries also levels in DG room remains always more than 90 dB(A). In industries, these DG sets are installed in isolated & covered rooms to confine the noise exposure to the limited area.

HEARING CONSERVATION PROGRAMME

In industries where noise levels are exceeding 90 dB(A), Hearing Conservation Programme should be enforced to reduce the

exposure of employed person and others to noise.

Effective hearing conservation programme includes following key element

a) Evaluation of noise exposure

b) Clear demarcation of noisy areas and activities

c) Control of hazardous noise by engineering methods

d) Use of personal protection like ear muffs/ear plugs, if noise is not adequately controlled by engineering or administrative methods.

e) Audiometric examination of workers at periodic intervals to assess their hearing losses due to noise exposure.

f) Education and training to generate awareness among the employees on different aspects of noise exposure and control.

CONTROL OF NOISE EXPOSURE

In industries as discussed above, quite a good number of employees are exposed to noisy operations and therefore suitable engineering and administrative methods should be introduced to reduce noise and protect workers from exposure of noise.

The most satisfactory method of noise exposure control is the reduction of noise at its sources which can be achieved by following methods.

1. Proper planning at early stage by selecting less noisy machines.
2. Substitution of equipments/process with less noisy alternatives.
3. Isolation.
4. Modification of the noise sources by relocating machinery, adding silencers, sound proof enclosure or damping materials and
5. Adopting proper maintenance procedure.

In case above measures do not give desirable control, administrative measures like rotation of job, changing/combining production schedule etc. should be adopted to limit the exposure of employees. If this is not possible, the workers should be provided with suitable hearing protection like ear muffs/ear plugs.

CONCLUSION

It is an accepted fact that the excessive exposure of noise for prolonged period may cause hearing disabilities. It is therefore essential that effective measures should be adopted to control the noise levels in industries and hearing conservation programme should be implemented to have effective control on it.

In cities like Kanpur, the problem of noise by diesel generators which are installed in small commercial/business centres are posing great noise hazards not only to the persons engaged in occupation in business centres but also to the general public.

Systematic efforts are needed to direct the effort in this direction to solve the problem of noise along with other environmental hazards to the community at large.

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STUDY ON 'SAFETY,HEALTH & WORKING ENVIRONMENT IN A PESTICIDE FACTORY'

This study was undertaken by Regional Labour Institute, Calcutta with the objective to study the level of airborne contaminants present in the workplace and to suggest suitable measures to improve the overall working condition.

BRIEF OF THE MANUFACTURING PROCESS

The company manufactures 2,4-D sodium salt and 2,4-D amine using three raw materials viz.dichlorophenol(DCP) monochloroacetic acid(MCA) and sodium hydroxide. Molten DCP, 50% solution of MCA and 50% solution of sodium hydroxide are charged together to a steam heated reactor. The exothermic reaction takes 45 hrs for completion. After the completion of the reaction, the slurry is transferred to settling tank for cooling which takes approximately 24 hrs. The cooled product is then centrifuged to remove the liquid phase. The moist solid mass is then broken and dried in an oven to evaporate any residual moisture. The dried mass is sent to decentricator and then to pulveriser to make the mass in powder form. The finished pesticide is then poured and despatched.

METHODOLOGY

Representative air samples were collected from different locations of the manufacturing process to collect air-borne 2, 4-D sodium salt using glass-fibre filter paper. Both personal and static sampling were carried out to assess the level of exposure of the pesticide of the workers engaged in the process. General work area samplings were also carried out to measure the level of exposure of other persons.

FINDINGS

Collected samples of 2,4-D sodium salt dust were analysed using High Performance Liquid Chromotograph (HPLC) and UV-VIS spectrophotemetric detector keeping the wavelength at 289 mm.

The results of the analysis show that the air-borne levels of 2,4-D sodium salt have not exceeded the threshold limit values (TLV) of 10 mg/m^3 in the different work-areas viz.'near centrifuge', 'near drier', 'near pulveriser' and in 'general work-room air'. However, the airborne levels of the pesticide 'near decentricator' were found well above the TLV. The airborne levels of the pesticide in the packing area were also found below the TLV.

RECOMMENDATIONS

Several recommendations were made to improve the working conditions. Improvement in the area of ventilation both in the manufacturing and packing units, minimisation of manual handling of pesticides, change of present system of packing, regular monitoring of work environment etc. were suggested for further improvement.

STUDY ON PROCESS SAFETY IN A CHEMICAL FACTORY

This study on process safety in a chemical factory was undertaken by Regional Labour Institute, Chennai. The study was conducted with the objective to study the manufacturing process in order to evaluate the safety and health aspects and to suggest remedial measures to improve the overall safety performance of the Plant.

METHODOLOGY

This factory is basically a formulation unit engaged in the production of three main types of pesticides viz. dusting powder, granules and emulsifiable concentrate. The main products are Acephate, Carbendazim, Carbofuran, Mancozeb, Monocrotophos, Chlorpyrifos, Endosulfan, Fenmevalerate etc. The process involves only physical mixing of chemical ingredient with the inert material/diluent, emulsifier, etc. in a definite proportion as per the specifications. The process of dusting power involves mixing and blending of chemical powder with inert material such as china clay etc. The semi-solid pesticide in drums are melted to liquefy by keeping in electrically heated hot water baths.

FINDINGS

Various deficiencies were observed in the storage area Some of the pipelines and joints etc. in the powder packing plant-IV were found in poor condition having openings at number of places and tied with the polythene sheet resulting into emission of fine dust in the atmosphere.

RECOMMENDATION

Various remedial measures have been suggested to improve the overall safety in the formulation area which includes providing a shed over the cyclohexanone tank, providing level indicator with proper marking, provision of flame arrestor with the vent system of the cyclohexanone tank, proper earthing and bonding of the tank, filling pumps etc.

In view of the emission of high dust level during the process, dust extraction device has been suggested to be provided with the microniser. Floors, stairs etc. of the powder formulation plant have been suggested to make the surface smooth for easy collection of spilled power.

Improving the lighting under the platform in the formulation room, providing more fire extinguishers, drawing up proper painting schedule and following IS colour coding of the pipelines, modification of the nozzles of the PVC hose pipe of the pump used for charging the liquid chemical into the formulation tank,proper decontamination of the empty drums of pesticides etc.were also suggested.

TRAINING WORKSHOP ON "TRAINING METHODOLOGY FOR TRAINERS IN SAFETY, HEALTH & ENVIRONMENT"

PROGRAMME PERSPECTIVE

Accidents should be prevented for human, social and economical reason. Accident prevention approaches cannot be effective unless people at all the levels are given training to develop skill and attitude towards safety. Education and Training would help to create, maintain and sustain safety consciousness. Safety Officers, Training Officers and Line Managers can undertake the responsibility of training for all levels of people in the organisation for discharging their responsibility with safety.

To achieve this, Safety Officers, Training Officers and Line Managers should be trained as a trainer to develop the skill of designing and conducting effective safety training.

OBJECTIVE

1. To review knowledge on Industrial Accident Prevention and Control techniques.

2. To develop training/instructional skills in organising and conducting training programmes at all levels in the organisation.

3. To develop practical approaches for inculcating safety consciousness amongst all levels in the organisation.

CONTENTS

- Training strategy for improving working conditions and environment.

- Identifying safety training needs.

- Improving working environment and conditions through people.

- Organisational safety training action strategies.

- Job safety programme for executives/officers

- Training methods and skills

- Preparation of appropriate lesson plans.

METHODOLOGY

The participants of the workshop will be divided in different groups for detailed discussions on the first day. The strategies as an outcome of the discussions will be again discussed on remaining four days.

Eminent speakers from the Govt. organisation, industries and institutes will also address the participants of the workshop.

PARTICIPANTS

Safety Officers, Training Officers and Line Managers, Manager functional areas.

DURATION: 5 days

Conducted by :

Staff Training Division
Central Labour Institute
Sion, Mumbai.

A mazdoor was run over by a pay loader at the fertiliser berth of a Port.

Investigations into the accident revealed that the accident had taken place due to the negligence of the pay loader driver and improper supervision at the berth.The employer was warned for breach of Reg.91(1) and 117 of the Dock Workers (Safety, Health and Welfare) Regulations, 1990. Further, the driver of the pay loader was warned through his employer for his negligent driving.

A labourer who was employed for locating a container in the container parking yard in the Port was dashed by a trailer which was reversing to take position for taking delivery of a loaded container. The labourer suffered injuries to his legs and succumbed to his injuries in the hospital later on.

Investigations into the accident revealed that the accident had taken place due to reversal of the trailer without the aid of a signaller, breaching Reg.57(8)(b) of the Dock Workers (Safety, Health & Welfare) Regulations, 1990.The owner and driver of the trailer were issued with a show cause notice for breach of Section 14(1)(a) and Reg.57(8)(b) read with Reg.7(5) respectively.

In a major Port, a helper of an excavator deployed in one of the holds of a ship engaged in discharging of bulk DAP, while checking water, oil level, etc. fell down from the equipment and got serious injuries. Later on the victim succumbed to his injuries.

Investigations of the accident had revealed that the accident had occurred mainly due to the carelessness of the victim.The Port Trust was advised to ensure availability of stretchers including sling stretchers in good/working condition in docks. The employer as well as the foreman of the employer were also informed about the need for use of proper stretchers for taking out the accident victims from the holds of ships.

Further the employer was advised to ensure that no unauthorised work be carried out during lunch break, tea break, etc.

A cleaner was hit and run over by a trailer while he was crossing the road to go to the canteen and succumbed to his injuries in a Port.

Investigations into the accident revealed that the accident had taken place due to rash driving of the trailer driver and the unsafe act of the deceased.The driver of the trailer was warned for his negligence and further the port authorities were advised to provide zebra crossings in front of the canteen.

In the night shift, workers were deployed for the discharge of wooden logs on to the shore from a vessel at the port of Calcutta. A log rolled and hit a mazdoor on his forehead and he died on the spot.

Investigations into the accident revealed that the derricks were operated in a very unsafe manner breaching Regulation 117 of the Dock Workers (Safety, Health and Welfare) Regulation 1990.The employer was warned for breach of Regulation No.117.

In the 2nd shift loading of containers on to the trailer from the container parking yard in the port of Mumbai, a mazdoor who was assisting in loading of containers on to the trailer, while passing from one side of the trailer to the other was hit by the trailer which was being driven and reversed by a cleaner.He received severe head injuries and succumbed to the same in the hospital.

Investigations into the accident revealed that the accident had taken place due to negligence of the cleaner and the driver. Further the supervision by the employer was found to be inadequate and the workers were not provided with PPE breaching Regulation 66(6) and 73(1) of Dock Workers (Safety, Health & Welfare) Regulation 1990. The
employer has been warned for breach of Regulation 66(6) and 73(1). Further prosecution proceedings has been initiated against cleaner for his unsafe act.

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: Respiratory symptoms among glass bottle workers-Cough and airways irritancy syndrome.

CIS ACCESSION NUMBER :
CIS 99-1200

ABSTRACT :

In a study of a cohort of 69 glass bottle workers, symptoms, employment history and clinical investigations including radiology, spirometry and serial peak expiratory flow rate records were retrospectively analyzed from clinical records. The results showed a consistent syndrome of work-related eye, nose and throat irritation followed after a variable period by shortness of breath. The latent interval between starting work and first developing symptoms was typically 4 years. The interval preceding the development of dyspnoea was longer and much more variable. Spirometry was not markedly abnormal in the group, but 57% of workers had abnormal serial peak expiratory flow rate charts. Workers in this industry experience upper and lower respiratory tract symptoms consistent with irritant exposure. The long-term functional significance of these symptoms should be formally investigated. Topics: chest radiography; cohort study; eye irritation; glass industry; irritants; irritation; latency; maximal expiratory flow; one-second forced expiratory volume; pulmonary function; respiratory diseases; spirometry; symptoms.

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

IDENTIFICATION

Product name(s) : Iodine

PRODUCT IDENTIFICATION

Product name: Iodine
Common synonyms: n/a

Chemical family: halogens
Formula: I2
Formula wt.: 253.81
Cas no.: 7553-56-2
Niosh/rtecs no.: NN1575000
Product use: Laboratory reagent
Product codes: 2212,5189,5479,2208,2211

PRECAUTIONARY LABELING

Health - 2 moderate
Flammability 0 none
Reactivity - 2 moderate
Contact - 3 severe (corrosive)

Laboratory protective equipment

Goggles; lab coat; vent hood; proper gloves

U.S. PRECAUTIONARY LABELING

Danger
Corrosive. harmful if swallowed, inhaled or absorbed through skin. Causes severe eye burns. May cause eye damage. Causes skin irritation. Oxidizer.Contact with other material may cause fire.Do not get in eyes, on skin, on clothing. Avoid breathing dust. Keep in tightly closed container. Use with adequate ventilation. Wash thoroughly after handling.

INTERNATIONAL LABELING

Harmful by inhalation and in contact with skin.
Do not breathe dust. Avoid contact with eyes.

PHYSICAL DATA
Boiling point: 184 C (363 f) (at 760 MM HG)

Vapor pressure (MM HG): 0.31 (20 C)
Melting point: 114 c (237 f) (at 760 MM HG)
Vapor density (air=1): 9.0
Specific gravity: 4.93 (H2O=1)
Evaporation rate: n/a
Solubility(h20): Negligible (<0.1%) (21 C)
% volatiles by volume: 100
PH 5.4 (Saturated Solution)
Odor Threshold (P.P.M): N/A

Physical state: Solid
Coefficient water/oil distribution: N/A
Appearance & odour: Purple to black crystals.Characteristic odour

FIRE AND EXPLOSION HAZARD DATA

Flash point (closed cup): n/a. Autoignition temperature: n/a
Flammable limits: upper - n/a
Lower - n/a

Fire extinguishing media

Use extinguishing media appropriate for surrounding fire.
Special fire fighting procedure.
Firefighters should wear proper protective equipment and self contained breathing apparatus with full facepiece operated in positive pressure mode.

Unusual fire & explosion hazards

Moderate oxidizer: Contact with other material may cause fire
Toxic gases produced: None identified
Explosion data-sensitivity to mechanical impact: None identified
Explosion data- Sensitivity to static discharge: None identified.

HEALTH HAZARD DATA
Threshold limit value (tlv/twa): 1.0 mg/m3 (0.1 ppm)
Tlv listed denotes ceiling limit.
Short-term exposure limit (stel): not established
Permissible exposure limit (pel): 1 mg/m3 (0.1 ppm)

Pel listed denotes ceiling limit.
Toxicity of components

Oral woman LDLO for iodine: 26 MG/KG
Oral Human LDLO iodine: 28 MG/KG
Oral rat LD50 for iodine: 14 G/KG
Carcinogenicity: NTP.NO IARC: No Z list: No Osha reg: No

Carcinogenicity: None identified.
Reproductive effects: None identified.
Effects of overexposure
Inhalation: Irritation of mucous membranes, severe irritation or burns of respiratory system, pulmonary edema, lung inflammation, and may be fatal.
Skin contact: severe irritation or burns
Eye contact: Severe irritation or burns, prolonged contact may cause permanent corneal damage, and blindness, may occur
Skin absorption: none identified
Ingestion: Irritation and burns of mouth and throat, gastrointestinal pain, nausea, vomiting, fever, shock, bloody urine, difficult breathing, and may be fatal.
Chronic effects: lung damage, thyroid damage, bladder damage
Target organs:
Respiratory system, eyes, skin, central nervous system, cardiovascular system
Skin contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes.
Eye contact: Immediately flush eyes, including under eyelids with large amounts of water for at least 15 minutes. Assure adequate flushing of the eyes by separating with fingers. Obtain medical attention without delay, preferably from an ophthalmologist.

Reactivity data

Conditions to avoid: Heat, flame, other sources of ignition, sunlight .Incompatibles:
Strong reducing agents, ammonia, ammonium salts, acetylene, acetaldehyde, combustible materials, aluminium, chemically active metals, powdered metals, carbides, ammonium hydroxide.Decomposition products: None identified.

SPILL & DISPOSAL PROCEDURES

Steps to be taken in the event of a spill or discharge Wear self-contained breathing apparatus and full protective clothing. With clean shovel, carefully place material into clean, dry container and cover; remove from area. flush spill area with water.
Disposal procedure:Dispose in accordance with all applicable Federal, State and local environmental regulations.

INDUSTRIAL PROTECTIVE EQUIPMENT

Ventilation: Use general or local exhaust ventilation to meet TLV requirements
Respiratory protection: None required where adequate ventilation conditions exist. If airborne concentration exceeds TLV, a self-contained breathing apparatus is advised.
Eye/skin protection: Safety goggles, uniform, apron, rubber gloves are recommended.

STORAGE AND HANDLING PRECAUTIONS

Saf-t-data* storage color code: white (corrosive)
Storage requirements:Keep container tightly closed. Store in corrosion-proof area. Keep containers out of sun and away from heat.

* Trademark of Mallinckrodt Baker, Inc - approved by Quality Assurance Department.

<u>NOTE</u>: 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 of about 1,00,000 chemicals/materials are available with Central Labour Institute.Computer printout will be supplied on nominal charge basis.

LIBRARY AND INFORMATION CENTRE

The Library and 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 28 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 April 2000 till date a number of publications in the field of OS&H have been added to Library. Some of them are :

SAX'S DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS

Author: Richard J.Lewis, Sr.

Publisher:John Wiley & Sons,Inc, New York

This tenth edition of *Dangerous Properties of Industrial Materials* includes comprehensive hazard information on the substances encountered in the workplace. The objective of the work is to promote safety by providing the most up-to-date hazard information availa ble.

Over two-thirds of the entries have been revised for this edition. There are 23,500 entries in this volume, 21,334 contain CAS numbers, Preference was given in selection of new entries to those listed in the EPA TSCA Inventory.

Numerous synonyms have been added to assist in locating the many materials that are known under a variety of systematic and common names. The synonym cross-index
contains 108,000 entries consisting of the entry name as well as each synonym. This index should be consulted first to locate a material by name. Synonyms are given in English as well as other major languages such as French, German, Dutch, Polish, Japanese, and Italian.

Many additional physical and chemical properties have been added. Whenever available, physical descriptions, formulas, molecular weights, melting points, boiling points, explosion limits, flash points, densities, autoignition temperatures, and the like have been supplied.

The following classes of data are new or have been updated for all entries for which they apply:

1. ACGIH TLVs and BEIs reflect the latest recommendations and now include intended changes.
2. German MAK and BAT reflect the latest recommendations.
3. NTP 8th Annual Report on Carcinogens entries are identified.
4. CAS numbers are provided for additional entries.

Each entry concludes with a Safety Profile, a textual summary of the hazards presented by the entry. The discussion of human exposures includes target organs and specific effects reported. Carcinogenic and reproductive assessments have been completely revised for this edition.

Fire and explosion hazards are briefly summarized in terms of conditions of flammable or reactive hazard. Where feasible, fire fighting materials and methods are discussed. Materials that are nown to be incompatible with an entry are listed here.
Every effort has been made to include the most current and complete information.

INDIA MOVING TOWARDS REAL DEVELOPMENT: ILO CHIEF

Having taken on the industrialised world at previous trade meetings in Seattle and Bangkok and flaying the existing globalisation policy, the Director General of International Labour Organisation, Mr. Juan Somavia, is confident that the developing world would successfully adopt the "escalator approach:"in the coming years. He has already "perceived the signs of something happening in India" despite all its complexities.

Winding-up his four-day visit to New Delhi, he said during a group interview that he felt very enthusiastic about India and all the issues that he discussed were very real. He also said that the the country was trying to move towards real development.

The ILO chief too talks in realistic terms, determined that he is about putting a social pillar to globalisation, Critical about the "one size fits all" market concept prescribed by the West, this first DG from the South is fully aware that such a "prescriptive globalisation" has failed to deliver an international order politically and socially acceptable to all.

Clear in his thoughts that the industrialised nations should display a proper sensitivity towards social aspects of growth in the developing world and among their own people, Mr.Somavia, talked about a "social floor" for globalisation.

"The present model of globalisation is like an open floor where an enormous number of people fall the bottom" in his words. Whereas markets should work for everybody so that "decent work" and not just employment forms the basis of a new globalisation order, is his opinion.

In reply to a question on whether informal economy could form the social floor in his idea of globalisation, he stressed that there was a definite need to move into informal sector and upgrade the quality of work. To state further that public policies and empowerment of people were a necessity to achieve the objective,he said that an escalator had to be put in the informal sector and the migrant worker had to be given the same rights as a permanent worker.

In response to a question on I.T.revolution, he said, it was still in an infancy state and its impact was just beginning. However, he asserted, that the developing world was at an advantageous position because the new technology permits it to leap frog in terms of education, wiring up villages and using social dialogue as the most powerful social instrument for ushering in change.

He also queried why we had thought that the young people relate to the information and technological revolution rightway and effortlessly and said that it was a great facility beyond methods which cannot be overlooked at any cost and its users had to be tapped for restructuring with a socially conscious eye.

On India's ability in social development given the contradictory ground realities, Mr.Somavia agreed that India was occupied in the task of nation-building and as a provider of goods and services. But it never lacked in the element of consciousness, he said, citing the example of child labour.

Fifteen years ago when the world hardly talked about child labour, India had encased rights of a child in its Constitution. Agreeing that it was realisticaly not possible to remove child labour per se, so integrally linked to poverty and development, Mr.Somavia said, at least the entire world had come around together to abhor the worst forms of child labour (like prostitution, pornography, crime and drugs).

By distinguishing between child labour and the worst forms of child labour, we are trying to create the biggest consensus around the issue, he said, adding that the ILO approach towards elimination of child labour was development-oriented. When asked to prioritise measures for getting rid of social

evils like child labour, he puts'empowerment of women' on top.

Source: The Hindu

TRAINING WORKSHOP

A training workshop on "Higher Productivity & a Better Place to Work" for owners/managers of small and medium scale enterprises was conducted at Nasik in association with Director (ISH) Maharashtra on 2nd April,2000. The workshop was presided and inaugurated by Shri V.K. Jain, G.M. India Security Press, Nasik. Shri V.U.Madane, Director (ISH), Maharashtra was the Chief Guest and Shri K.K.Gupta, Addl.G.M. HAL, Nasik was the guest of honour. An officer of the small scale cell, Central Labour Institute gave a brief description of the role of CLIP and the Methodology of the workshop. Two hundred participants including 32 owners/managers participated in the workshop.

FIRE SAFETY WEEK

National Fire Safety Week was observed at Central Labour Institute, Mumbai from 14th to 18th April, 2000. On this occasion, half day programme on Fire Safety was organised for officers and staff of Central Labour Institute and Directorate General Factory Advice Service & Labour Institute. The programme was inaugurated by the senior officer of CLIP. Two technical papers, i) Prevention and Control of Fire & ii) Fire Safety in Office Building were presented by Shri MB Chowdhary, Sr.Safety Officer - Fire, NOCIL, Mumbai and Shri M.K.Mukherjee, Dy.Manager, LPA, Mumbai respectively. The programme concluded with vote of thanks.

Regional Labour Institute, Kanpur celebrated "Fire Safety Fortnight" from 10-20 April, 2000. A training programme on "Industrial Fire Prevention & Control" was conducted from 10-14 April, 2000 in which participants from 9 organisations participated. The celebration of fortnight and Fire Safety was inaugurated by the Chief Fire Officer, Kanpur who also delivered a speech. A half day training programme on Use & Maintenance of various types of Fire Extinguisher was conducted for the benefit of staff and officers of the Institute in which practical training on use of fire extinguishers was given to some staff by a fire man of Fire Station at Fazalganj, Kanpur.

MAY DAY CELEBRATION

Central Labour Institute, Mumbai celebrated May Day on 1st May, 2000. The theme of May Day celebration was "Work Environment & Working Conditions in the Construction Sector". One senior officer of the Central Labour Institute gave welcome address and the Director General chaired the session. Ms. Farida Lamby. Vice Principal, School of Social Work, Nirmala Niketan graced the occasion as the Chief Guest. She portrayed the problems faced by the unorganised construction workers during the present phase of rapid technological change and globalisation. She highlighted the Occupational Safety and Health needs of the construction workers and sought technical co-operation and support from DGFASLI organisation in organising training programmes for social workers in construction sector for updating their knowledge about safety and health hazards in construction work. Ms.Vaijayanta Anand, along with her project team members made an excellent presentation on the working environment and working conditions of construction labourers through lecture discussions, slides shows etc.

On the occasion of May Day, a poster exhibition on the working conditions of the construction workers and their rights was also organised.

"May Day" was also celebrated at RLI,, Kanpur on theme of "Safety, Health & Welfare of Industrial workers". An officer of the institute delivered welcome speech on this occasion. Two union leaders from Ordnance Factory, Kanpur delivered talks on the hosting of May Day as well as Safety, Health & Welfare of industrial workers.