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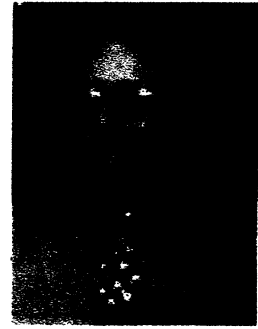
मेरी कलम से

कीटनाशक रासायन और निरुपण उत्पादन, उद्योगों का एक विशेष समूह है जिसमें कार्यरत कामगारों और इसके आस-पास के व्यक्तियों की सुरक्षा और स्वास्थ्य सुनिश्चित करने के लिए विशेष ध्यान देने की आवश्यकता है। उत्पादन और निरुपण स्तर पर नियुक्त अनेक कामगार, विषैले कीटनाशकों और संबद्ध रासायनों से प्रभावित होते हैं। अन्य उद्योगों की तुलना में, इस उद्योग में विभिन्न उत्पादों का भिन्न विशाक्तता स्तर (व्यक्तियों के लिए), स्वयं के मामले में कामगारों की अज्ञानता और सुरक्षित कार्य पध्दती सख्ती से लागू करने में कमी, इस उद्योगकी विभिन्न और जटिल समस्याओं के लिए उत्तरदायी है। कीटनाशकों की असावधान हैंडलिंग से मामूली अपंगता, गंभीर बीमारी और मृत्यु भी हो सकती है।

डोजीफासली ने, १८ कीटनाशक कारखानों में, कीटनाशकों के इमल्शन बनाने योग्य सांद्रितों के हस्तकौशल में प्रक्रिया सुरक्षा और कार्यपर्यावरण का सर्वेक्षण किया। इस सर्वेक्षण की मुख्य अवधारणाएँ, संस्तुतियों सहित इस न्यूजलैटर के आवरण लेख में दी गयी हैं। आशा है कि प्लांट को सुरक्षित और स्वस्थ बनाने में उपयुक्त नियंत्रक उपाय करने के लिए यह लेख उद्योगों के लिए उपयोगी सिद्ध होगा।

मुन्ना कृष्ण

(एस.के.सक्सेना)
मुख्य संपादक



FROM THE DESK

The pesticide chemicals and formulation manufacture is a special group of industries, which requires extra attention to ensure safety and health of workmen as well as people around it. Many workers employed at manufacturing as well as formulating stages are exposed to the dangerous pesticides and allied chemicals. Varying degrees of toxicity (to human beings) of various products, worker's ignorance concerning them and lack of stringent enforcement of safe work practices are responsible for the different and more difficult problems faced in this as compared to other industries. Careless handling of pesticides may cause minor disability, serious illness and even death.

DGFASLI had conducted a survey on Process Safety and Work Environment in the manipulation of emulsifiable concentrates of pesticides in 18 pesticide factories. Some of the important findings of the survey along with recommendations are presented in the cover feature of this Newsletter. It is hoped that the article will help the industries in taking suitable control measures to make their plant safe and healthy.

S.K. SAXENA
EDITOR -IN- CHIEF

COVER FEATURE

PROCESS SAFETY AND WORK ENVIRONMENT IN THE MANIPULATION OF EMULSIFIABLE CONCENTRATES OF PESTICIDES – A SAMPLE SURVEY

Dr.A.K. MAJUMDER & SMT.M.K.MANDRE

Emulsifiable Concentrates (E.C.) of pesticides are prepared by mixing active pesticide chemicals, diluting solvents, emulsifiers and stabilizers with the object to convert it into water emulsion of required strength at the point of use. Manipulation includes mixing, blending, formulating, filling, emptying, packing or otherwise handling. A variety of solvents and technical pesticides are blended in definite proportions to make E.C. formulations. Manipulation of dangerous pesticides is considered as hazardous process as per the Factories Act. A survey was carried out by DGFASLI in 18 pesticide factories to assess the safety and work environment conditions in the manufacture of emulsifiable concentrates of pesticides. Some of the important findings of the survey along with recommendations are presented in this paper.

PROCESS SAFETY

The common hazards involved in E.C. formulations are hazardous storage and handling of technical pesticides and diluting solvents posing safety and health hazards, possibilities of explosion of headspace of mixing vessels and emission of toxic vapours at the time of filling and packing. The risk of skin absorption of the pesticides due to carelessness or accidental splash is also present in the process. The existence and effectiveness of hazard control measures to avoid the above problems had been recorded for most of the units covered in the study, which are presented in Table – I.

It is observed from Table – I that only few units are following all the required safety precautions in the EC preparation area. The general recommendations which should be followed in the EC areas by all the units are presented in the following paragraphs:

- a) The spillage of solvents and formulated product is a common occurrence in the Emulsified concentrate area. There have been cases of fatal pesticide poisoning by absorption of pesticide through skin and inhalation while handling the spilled formulation. Keeping these possibilities in view, it is suggested that the solid adsorbents should always be kept available in the EC area. Any spillage should be adsorbed in it. The workers engaged in clean up of the spilled material should be equipped with impervious overall, face, hand and feet protection and chemical cartridge respirator/gas mask with canister for organic vapour and mechanical filter. Air line respirator can also be used. The contaminated adsorbent should be stored in closed bins specially earmarked for hazardous wastes till these are disposed off by burning in incinerators.
- b) Most of the factories had originally provided flame proof electrical fittings in the EC area. Subsequently ordinary electrical fans and lights have been introduced in some units. It is suggested that only flame proof electrical fittings should be installed in the EC areas and they have to be maintained properly.
- c) There are possibilities of generation of electrostatic charge in the mixer surface which has potential to cause explosion of the head space. It is suggested that explosion vent should be provided on the top of the mixer by providing plate or weak seam of the plates used for the fabrication of the tank. This will restrict the losses on explosion of head space.

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- d) Mixers of many units were not provided with the level indicators. The workers were seen opening the manhole to measure the level of the tanks. It is suggested that well guarded glass level indicating tubes may be provided on the mixers.
- e) Some of the mixer tanks were seen to be provided with the level switches to cut off the power supply of the pump motor. It is a good practice and should be followed in the other units also. It should, however, be noted that only flame proof level switches should be used in the mixer.
- f) The mixer tanks should be properly sealed and the vent pipes should be provided with flame arresters or two layers of wire nettings to prevent the entry of flame into the tanks in case of fires in the vicinity of the tank. In most of the factories, tanks were not properly sealed which rendered the vents ineffective.
- g) Packing of prepared EC into the containers of different sizes poses the risk of skin contact and inhalation of the toxic vapours. Possibilities of fires due to formation of explosive environment in case of spillage also exist. In some units, the packing was being done by automatic and semi-automatic system. Even the semi-automatic system in which workers were required only for sealing the caps or labelling of the containers presents exposure of the packers. The manual packing, on the contrary, involves risk of skin absorption and inhalation of some pesticide vapour. It is suggested that manual filling should be done only with adequate chemical cartridge respirators or gas mask for organic vapours or airline respirators. Efforts should be made to convert filling and packing operations fully automatic.
- h) The solvent storage in most of the factories was far from adequate. It is suggested that the following safety measures should be ensured in solvent storage area.
- All the electrical fittings should be of flame proof type approved for Zone-1 flammable hazard.
 - The storage tanks should be doubly earthed and bonded with piping by providing conductive jumpers across all the flanges in the vessels and pipelines.
 - The tanks should be surrounded by a dyke wall of capacity enough to hold the largest tank in the dyke. The floor inside the dykes should be impervious and sloped to a sump. The sump should be provided with the drain pipe with valve approachable from outside. The valve should be kept closed under normal conditions. If more than one tank is situated in the common dyke, isolating walls of low height should be provided in between the two tanks, each compartment of such isolation should have sumps, drain pipes with valves which should be kept closed under normal conditions.
 - Overfilling of the storage tanks and spillage of liquid from the top openings is common occurrence. In order to prevent it, it is suggested that the tanks should be provided with overflow pipes. The other ends of such pipes should be kept dipped in water to prevent entry of air through them.
 - The tanks should be properly sealed and vents of the tanks should be provided with flame arrestors or at least two layers of wire netting to prevent ingress of

COVER FEATURE

flame into the tank in case of fire in the vicinity.

- The dip hatches should be provided in the tank. Dip rod of only non-sparking material should be used to check the level of the tanks. Dip level gauging should not be done till 15 minutes after filling the tank.
- The liquid inlet pipe should extend up to near the bottom of the tank to avoid splash filling and subsequent generation of the static charge on the surface of the tanks.
- Only non-sparking tools should be used while carrying out any maintenance work in the solvent storage area.

WORK ENVIRONMENT MONITORING

The results of work environment monitoring carried out in EC areas are presented in Table-II. It is seen from the table that the concentration of airborne levels of various pesticides and solvent vapours were either below or just above the TLV or PLE prescribed for the respective contaminants.

In few factories, where the toxicities of the substances involved were comparatively high such as factory B-6 where monocrotophos and endosulfan were in use, the environmental concentrations (maximum) were above their permissible limits. In such cases, airline respirators or chemical cartridge respirators should be used. The ventilation of the areas should also be enhanced by providing exhaust fans and openings in the opposite walls.

The maximum risk in EC formulation area is posed by emergencies arising out of large spillage of technical pesticides or formulated products. In one of the factories, there had

been an incident involving death of 4 persons, who were engaged in filling the spilled EC back to the drum manually. They collected the spilled material on uneven floor with mugs and were so severely exposed that in the same night they were hospitalised and subsequently died. Hence, it is suggested that under no circumstances the drum should be emptied by tilting. Instead, proper hand operated pumps should be used for removing the materials from the drums. Airline respirators should be used by the workers carrying out filling, packing and inspecting the operations. As far as possible, all the points of regular emission of vapours should be covered by properly designed local exhaust systems.

It was observed that the pesticides spilled on the floor were not properly decontaminated; hence, floors kept emitting the vapours persistently. It is suggested that the floors of the EC areas should necessarily be washed with soap or detergent to remove all the pesticide chemicals sticking to the floor. The deactivating adsorbents to absorb and remove the spills should be readily available in the EC areas.

In most of the units, the workers were seen to tie a piece of cloth over the face as protection against the contaminants. It is suggested that appropriate types of personal protective devices should be used by the workers. Inadequate protection like disposable dust masks or pieces of cloth tied on the face provides false sense of protection and may be responsible for severe exposure.

The contract workers were often engaged for these operations, who were generally illiterate or poorly educated. They were often found working in hazardous process areas without adequate protection. It should be realised that the responsibilities of the management towards the contract workers are as much as for regular workers. Hence, they should also be duly trained and adequately protected.

TABLE-I

Safety Related Observations in Emulsifiable Concentrate Preparation

Sl. No.	Hazard Control Measures	Number of Factories out of 18 Factories Covered in the Studies		
		Provided	Not provided	Not observed due to closure of operation
1	Safe Handling of pesticides and solvents free from spillage and vapour release	2	13	3
2	Flameproof electrical fittings	10	5	3
3	Mixer grounded and bonded with pipelines	12	6	--
4	Level Indicator in the mixer	2	14	2
5	Level switch	2	16	--
6	Explosion vent on the mixer	--	18	--
7	Vent pipe of mixer with flame arrester	2	16	--
	Packing of Formulation under local exhaust arrangement	6	10	2
9	Storage Tank area:	8	7	3
	a) Flame Proof electrical fittings	12	6	--
	b) Tanks grounded and bonded	2	14	--
	c) Adequate dyke/bund	--	18	--
	d) Overflow pipes with outlet seals	6	12	--
	e) Flame arresters in the vents	--	18	--
	f) Explosion vents	5	11	--
	g) Proper dip hatch	5	--	13
	h) Long inlet pipe	--	18	--
	i) Use of non-sparking tools	--	18	--

COVER FEATURE

TABLE-II

Environmental Conditions in the Preparation of Emulsifiable Concentrates (EC)

Sl. No.	Location/ Operation	Contaminant	Factory code	Concentration (mg/M ³)		TLV/PLE (mg/M ³)
				Range	Average	
1	Near mixer	Butachlor	B-1	0.01-0.05	0.03	5
		Cypermethrin	A-4	0.01-0.05	0.03	5*
		Ethion	A-6	0.06-0.035	0.32	0.4
			A-7 (a) Area	0.01-0.32	0.27	0.4
			(b) Personal	0.01-0.25	0.25	0.4
2	On the Mixer Platform	Cypermethrin	B-4 (a) Area	0.68-1.75	1.35	5.0*
			(b) Personal	0.45-1.50	1.20	5.0*
3	Charging of Pesticide chemical to the Mixer	Ethion	A-1	--	0.01	0.4
			A-6	0.01-0.50	0.42	0.4
		Monocrotophos	B-6	0.25-0.50	0.34	0.25*
		Cypermethrin	B-4 (a) Area	0.38-1.33	0.95	5.0*
(b) Personal	0.2-0.80		0.66	5.0*		
4	Near the discharge point of Mixer	Cypermethrin	A-4	0.03-0.05	0.04	5.0*
5	Near Charging Pump	Cypermethrin	B-7	0.1-0.3	0.2	5.0*
6	Near Container Filling	Quinalphos	B-6	Not detectable	Not detectable	0.5
		Chlorpyriphos	B-6	-do-	-do-	0.2
		Dimethoate	B-6	0.003-0.58	0.25	0.1
		Monocrotophos	A-1	--	0.01	0.25
		Endosulfan	B-6	0.003-0.15	0.08	0.1
			B-7	0.02-0.05	0.04	0.1
		Cypermethrin	B-4	0.2-0.6	0.45	5.0*
		Profenophos	A-11	0.18-0.40	0.27	10*
Xylene	A-11	7.0-50	26.8	435		
7	Manual Weighing of Containers	Ethion	A-7 (a) Area	--	0.01	0.4
			(b) Personal	0.01-0.17	0.10	0.4
8	Near Seaming machine	Quinalphos	B-6	Not detectable	Not detectable	0.5
		Chlorpyriphos	B-6	-do-	-do-	0.2
		Dimethoate	B-6	0.003-0.35	0.18	0.1
		Endosulfan	B-6	Not detectable	Not detectable	0.1
9	Packing	Ethion	A-6	0.14-0.58	0.43	0.4
		Monocrotophos	A-1	--	0.01	0.25
			B-6	0.25-0.30	0.28	0.25
10	General Work Area	Ethion	A-6	0.04-0.26	0.21	0.43
			A-7	0.01-0.02	0.10	0.40
		Cypermethrin	B-7	0.1-0.3	0.2	5.0*
			B-4	0.2-0.45	0.3	5.0*
		Dimethoate	B-6	--	0.003	0.1

*Adopted on the basis of the data on comparative experimental toxicology.

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INDOSHNEWS JULY-SEPTEMBER 2005

मिनरल ग्राइंडिंग उद्योगों में कार्य पर्यावरण एवं उसका नियंत्रण

डा. बृज मोहन

प्रस्तावना

देश में राजस्थान खनिज सम्पदा का विशाल भण्डार है। इस प्रदेश में क्वार्ट्ज, फेल्सपार, डोलोमाइट, लाइम, एस्बेस्टस इत्यादि का खनन किया जाता है। खनन के साथ-साथ इन खनिजों की ग्राइंडिंग (पिसाई) के लिए उद्योग भी राजस्थान में विभिन्न स्थानों पर विकसित हुए हैं। यह खनिज पिसाई के बाद उद्योगों में कच्चे माल के रूप में प्रयोग किए जाते हैं। यह इकाइयां विशेष रूप से लघु उद्योगों के रूप में कार्य कर रही हैं। ब्यावर (अजमेर) स्थित मिनरल ग्राइंडिंग उद्योग भी इस तरह की इकाइयों का एक केन्द्र है। इस जगह मिनरल ग्राइंडिंग की लगभग 200 इकाइयां कार्यरत हैं।

इस तरह की इकाइयों में ग्राइंडिंग के लिए बाल (Ball) या हैमर (Hammer) डिसइटीग्रेटर (Disintegrator) मिल प्रयोग में लाये जा रहे हैं। प्रत्येक औद्योगिक इकाई में धूल नियंत्रण के प्रबंध किए गए हैं परन्तु उचित रखरखाव के अभाव में यह प्रभावी रूप से कार्य नहीं कर पा रहे हैं। ऐसी स्थितियों में आवश्यक है कि इन उद्योगों की कार्य स्थितियों व कार्य पर्यावरण के बारे में उचित मूल्यांकन किया जाए व औद्योगिक इकाइयों के उद्यमियों को उससे परिचित कराया जाये जिससे उनके अन्दर इस विषय पर जागरूकता उत्पन्न हो व वे इसके नियंत्रण के लिए सकारात्मक प्रयास कर सकें।

अतः यह लेख इन इकाइयों में कार्य पर्यावरण में उपस्थित विभिन्न खतरों व अन्य कार्य स्थितियों के सरल मूल्यांकन से उद्यमियों को परिचित कराने में उपयोगी होगा व साथ ही साथ कार्य पर्यावरण के नियंत्रण व बेहतर कार्य स्थितियों को मिनरल ग्राइंडिंग उद्योग में विकसित करने के लिए एक मार्गदर्शिका के रूप में कार्य करेगा।

कार्य पर्यावरण व उसका नियंत्रण

उद्योगों में बेहतर कार्य स्थितियां उत्पादन में वृद्धि करती हैं व एक ऐसी स्थितियों का विकास करती है जहां कामगार या अन्य काम करने वाले व्यक्ति सुरक्षित महसूस करते हैं। उद्योगों में विभिन्न प्रकार के ऐसे कारक उपलब्ध रहते हैं जिनका अगर समुचित रूप से नियंत्रण नहीं किया तो वे असुरक्षित कार्य पर्यावरण का निर्माण करते हैं जिससे कामगारों के स्वास्थ्य व मनोबल पर विपरीत प्रभाव पड़ता है। यह कारक स्वास्थ्य की दृष्टि से निम्न दो प्रकार के होते हैं

1. रासायनिक
2. भौतिक

रासायनिक कारक :- कारखानों में रसायन जो कि विभिन्न प्रक्रियाओं में उपयोग में लाये जाते हैं उनके संग्रहण, प्रयोग व एक स्थान से दूसरे स्थान पर वाहन (ट्रान्सपोर्ट) करने आदि से कार्य पर्यावरण में प्रवेश कर जाते हैं। जब कामगार ऐसी स्थितियों में कार्य करता है तो यह रसायन धूल(डस्ट), फ्यूम, मिस्ट, स्मोक व गैसीय पदार्थ इत्यादि के रूप में हवा में उपस्थित रह कर श्वास मार्ग, त्वचा या मुख द्वारा शरीर मार्ग में प्रवेश कर जाते हैं। अगर कामगार इन रसायनों के सम्पर्क में लगातार रहता है तो उनका स्वास्थ्य विपरीत रूप से प्रभावित हो जाता है।

क्वार्ट्ज ग्राइंडिंग यूनितों में उपयोग में लाये जाने वाला क्वार्ट्ज भी एक रसायन ही है जिसका रासायनिक नाम सिलिका व रासायनिक सूत्र SiO_2 है। यह मुक्त अवस्था में प्रकृति में पाया जाता है व क्रिस्टलाइन सिलिका का शुद्धतम रूप है। क्वार्ट्ज में प्रचुर मात्रा में फ्री सिलिका की उपस्थिति इसे अन्य अकार्बनिक रसायनों से भिन्न व गंभीर व्यावसायिक रोग का कारक बना देती है। ग्राइंडिंग उद्योगों में जब क्वार्ट्ज विभिन्न विधियों द्वारा पीसा जाता है तो यह धूल के रूप में कार्य पर्यावरण में प्रवेश कर जाता है। जब कामगारों को ऐसी जगहों पर काम करना पड़ता है तो उन्हें फेफड़ों की बीमारी होने की संभावना बनती है जिसे सिलिकोसिस कहते हैं। यह एक गंभीर असाध्य व्यवसाय जनित रोग है जिसकी रोकथाम के अतिरिक्त कोई अन्य उपचार नहीं है। रासायनिक पदार्थों का प्रभाव निम्न कारकों पर निर्भर करता है:-

1. रसायन की प्रकृति कार्य पर्यावरण में रसायन की मात्रा
2. उद्भावन की अवधि व
3. व्यक्तिगत संवेदनशीलता।

कार्य पर्यावरण में अगर रसायनों की मात्रा का समुचित नियंत्रण उपलब्ध तकनीकों या विधियों से करा लिया जाए तो यह स्वास्थ्य, सुरक्षा व उत्पादकता की दृष्टि से उपयोगी सिद्ध होती है।

1. खतरनाक/हानिकारक पदार्थों/ रसायनों या प्रक्रियाओं की जगह कम खतरनाक/हानिकारक पदार्थों या प्रक्रियाओं को अपना कर।
2. खतरनाक प्रक्रियाओं या उपकरणों का पृथकीकरण करके।

ARTICLE I

3. असुरक्षित या हानिकारक प्रक्रियाओं या उपकरणों को हटा करके।
4. उपयुक्त प्रकार का वेंटिलेशन (लोकल या एक्जॉस्ट) उपलब्ध करवा कर।

अन्तिम या अतिरिक्त उपाय के रूप में कामगारों को उचित प्रकार का व्यक्तिगत सुरक्षा का साधन उपलब्ध करवा कर, इनका इन रसायनों से बचाव किया जा सकता है। धूल के बचाव हेतु डस्ट रेस्पाइरेटर उचित रहता है लेकिन उद्योगों में देखा जाता है कि कामगार को उचित प्रकार का डस्ट मास्क न प्रदान कर उन्हें कपड़े का मास्क उपलब्ध कराया जाता है, जिससे उसे समुचित सुरक्षा नहीं मिल पाती है।

स्वास्थ्य की दृष्टि से बहुत महीन-महीन धूल के कण ही जो आंखों के द्वारा दृष्टि गोचर ही नहीं होते, वही श्वसन मार्ग से फेफड़ों के अन्दर प्रवेश करते हैं। इस तरह के माइक्रोस्कोपिक कण कपड़े के मास्क इत्यादि को भेद कर श्वसन मार्ग द्वारा शरीर में प्रवेश कर जाते हैं। अतः ऐसी स्थिति में आवश्यक हो जाता है कि कामगारों को सही तरह का डस्ट रेस्पाइरेटर/मास्क ही उपलब्ध करवाया जाये जिससे कि वह उन्हें सही तरह से प्रयोग में ला सके।

उद्योगों को रसायन के बेतरकीब उपयोग से बचाना चाहिए व प्रक्रियाओं पर उपयुक्त नियंत्रण के साधन उपलब्ध करवाने चाहिए। जिनसे कि मैटेरियल लॉस के बचाव के साथ-साथ कामगारों के स्वास्थ्य व कार्य पर्यावरण का संरक्षण भी हो सके व कारखाने में उत्पादकता व समृद्धि आ सके।

व्यावसायिक रोगों की रोकथाम एवं इसकी जल्दी पहचान हेतु समय-समय पर चिकित्सकीय जांच की जानी चाहिए, साथ ही कामगारों को व्यक्तिगत साफ-सफाई (पर्सनल हाइजीन) व उपयुक्त गृह व्यवस्था स्थापित करने के लिए प्रोत्साहित किया जाना है।

भौतिक कारक : रासायनिक कारकों के अतिरिक्त कई तरह के भौतिक कारक जैसे अत्यधिक ध्वनि, उपयुक्त मात्रा में रोशनी का अभाव, तापमान इत्यादि भौतिक कारक भी स्वास्थ्य की विपरीत स्थितियों में कारखानों में उत्पन्न करते हैं।

क्वार्टज ग्राइडिंग यूनितों में विशेष रूप से ऐसे यूनित जिनमें वॉल मिल काम में ली जा रही है। वहां इस प्रक्रिया से अत्यधिक मात्रा में शोर पैदा होता है। अत्यधिक शोर के कारण कामगारों की श्रवण क्षमता प्रभावित होती है वह बहरेपन (अस्थायी या स्थायी) के शिकार हो जाते हैं। राजस्थान कारखाना नियमावली में इसके मानक प्रदान किये गये जिसके अनुसार कारखानों में 90 डी.बी.ए. डेसिबल का एक्सपोजर 8 घन्टे के लिए सुरक्षित माना गया है।

श्रवण क्षमता ह्रास के साथ-साथ शोर से प्रभावित व्यक्ति इसके नियंत्रण के लिए उपयुक्त नियंत्रण के साथ-साथ कामगारों को उचित प्रकार के इयर प्लग या मफ प्रदान किया जाना चाहिए जिससे वह अपना ऐसी स्थितियों से बचाव कर सके।

उपसंहार :

व्यवस्थित कार्य दशाएं व उद्योग में उपस्थित रसायन एवं भौतिक खतरों का समुचित नियंत्रण निरसिद्ध मूल्यवा संसाधनों के ह्रास को रोकने में महत्वपूर्ण योगदान देता है जिससे बचत के साथ कारखाने में कामगार का स्वास्थ्य सुरक्षित रहता है व वह स्वस्थ अवस्था में ज्यादा मनोयोग से कार्य कर कारखाने की उत्पादकता में वृद्धि के सहायक होते हैं। अतः उद्योगपति इसको तुरन्त एक खर्च की तरह न लेकर एक सकारात्मक प्रयास के रूप में ले जिसके दूरगामी परिणाम व ऐसा उद्योग आपकी उत्तरोत्तर वृद्धि की गारन्टी भी देगा व कारखाने में कार्यरत व्यक्ति भी आपके कारखाने में कार्य करते वक्त स्वयं को गौरवान्वित महसूस करेंगे।

नियंत्रण के उपायों को कारखाने में विकसित करने के बाद उनका रखरखाव (मैन्टीनेंस) भी एक महत्वपूर्ण बिन्दु होता है जिसके ऊपर समुचित ध्यान दिया जाना चाहिए। इसके अभाव में फिर कार्य स्थितियां अनियंत्रित होने लगती हैं व कारखाने में धीमे-धीमे हानि का प्रभाव दृष्टिगोचर होने लगता है। अतः विकसित प्रणालियों के समुचित रखरखाव हेतु लगातार प्रयास अत्यंत आवश्यक होता है।

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DUST CONTROL IN QUARTZ GRINDING MILLS

S.S. GAUTAM & P.K. SAXENA

Quartz is the purest form of crystalline silica, which is responsible for a deadly pulmonary lung disease called silicosis. The mineral has many industrial applications due to which it is mined and processed to match the requirements of the industries. This has led to several industrial agglomerations in the vicinity of quartz quarries and mines, which are producing powdered and granulated quartz. Beawar in Ajmer District of Rajasthan is one such place where a number of small-scale units have come up to crush, pulverize and disintegrate quartz. There have been many reports of occurrences of silicosis and subsequent deaths of persons exposed to crystalline silica in occupational as well as in general environment of this area. Keeping this problem in view, a project was taken up with the joint efforts of the Chief Inspectorate of Factories & Boilers, Rajasthan and the Directorate General, Factory Advice Service & Labour Institutes (DGFASLI), Ministry of Labour & Employment, Govt. of India to identify the dust producing points of the quartz grinding and disintegrating mills and to come out with the state of the art

methodology to control the dust. The present paper presents the findings of that work.

PROCESS DETAILS:

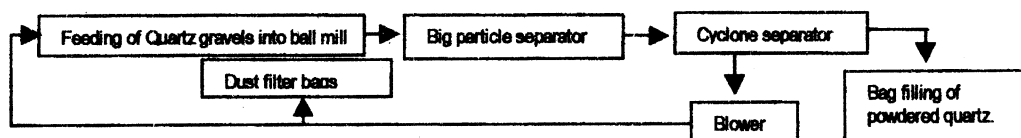
Several types of mills are used in various quartz grinding units depending on the application for which the product is intended.

Crushing:

Jaw crushers are used to break the large lumps into gravels. The crushed quartz is stored as an intermediate material in the form of piles or in the storage bins. The gravels are powdered or granulated in ball mill or hammer mill respectively.

Pulverisation in Ball Mills:

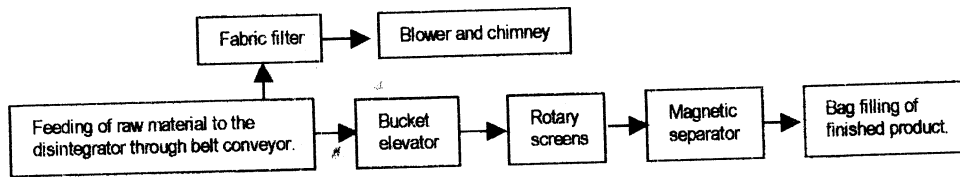
Feeding of gravels in some units is manual whereas in some units the feeding to charging hopper is done by belt conveyor. Air is blown through the ball mill to take away fine particles. The particles are subsequently separated from the air with the help of cyclone separator. Part of this air is recirculated and some part is vented out through a fabric filter unit.



Granulation in Hammer Mills:

The granular form of the quartz is prepared by disintegrators. In this device, the crushed quartz is pulverised by the hammer mill. The disintegrated material released from the discharge end of the hammer mill is

classified into different size groups with the help of vibrating screens. The granules of different sizes are collected after magnetic separator to remove the ferrous metal particles, if any.



The degree of mechanisation is different in different units. In some units charging of mills and pulverisers is manual whereas some other units make use of belt conveyors and bucket elevators for charging the hoppers.

OBSERVATIONS & SUGGESTIONS:

Jaw Crusher:

Jaw crusher feeding does not evolve much dust as large lumps are handled but the gravels released from the discharge end of the crusher produce dust. It is recommended that the discharge end of the crusher should be provided with dust proof chute, which may deliver the gravels to the belt conveyor for feeding into the ball mill or hammer mill hopper.

Loading Point of the Belt Conveyor:

Dust will be released at the point where the chute from the crusher may drop the gravels on the belt conveyor. Hence, it is recommended that the feeding point should be covered up to 2 x belt width in forward direction and up to 0.5 x belt width in entering end. The entering end should be completely covered and the sides and forward end opening should be provided with the rubber skirts. The enclosure should be connected to the local exhaust system ensuring that the velocity of air in the open face is 200 to 250 feet per minute (fpm) and the duct velocity is 3000-3500 fpm.

Gravel Bin Feeding Hopper:

Dust is generated at the top of gravel bin, where the belt conveyor delivers the gravels. It is recommended that the discharge end of the belt conveyor should be provided with a

hood with minimum face velocity of 150 fpm and air quantity of 350 cubic feet per minute (cfm) if belt speed is less than 200 fpm and minimum face velocity 200 fpm and air quantity 500 cfm if belt speed is more than 200 fpm. The duct should be designed to ensure that the linear velocity is 3000 to 3500 fpm. Alternatively, the bin feeding point is maximally enclosed and the exhaust is provided at some other point on the roof of the bin.

Bin to the belt conveyor loading point:

The gravels are required to be transferred to the feeding hopper of the ball mill or hammer mill. This point should also be provided with the enclosure and exhaust as described for the other belt conveyor loading point.

Feeding hopper of ball mill or hammer mill:

In case of mechanical feeding to the hopper, the hopper feeding point should be enclosed and exhausted with a system described for bin feeding point. If feeding is manual, proper feeding platform and enclosure with open front provided with rubber skirt duly exhausted with air handling capacity of 150 cfm/ft² of the open face should be provided.

Air cleaning device:

The air cleaning devices that are generally used consist of open type bag filters. The contaminated air enters the bags and comes out leaving the particles within the bags. The bags are knocked manually to let the dust fall into the hopper below, from where the dust is removed. It is suggested that the bag filter system should be modified by covering

ARTICLE-II

the bags completely and exhausting the air with the help of an additional blower. Air jet systems should be provided to knock the bags. Several designs of dust free fabric filters are technically feasible, which should be adopted.

Discharge point of hammer mill:

Discharge point of hammer mill generates a lot of dust. It should be connected to the feeding point of bucket elevator through a chute in such a way that no dust may come out. The casing of the bucket elevator should be connected to the exhaust system to maintain the negative pressure within the system.

Sieving screens:

Though the sieving screens are kept covered, dust is released from the discharge openings and leak points. It is suggested these should be connected to the local exhaust system to maintain the negative pressure.

Magnetic Separators:

The magnetic separators are presently open. These should also be enclosed and exhausted.

Bag filling of powdered or granulated quartz:

The bag filling dust can be controlled by providing annular exhaust around the discharge end of the chute. The opening of the bag is clamped with discharge duct of the chute. The dust released while removing the clamp is sucked by the exhaust system.

(Note: The detailed descriptions, sketches and design specifications of all the exhaust hoods and enclosures mentioned in this communication are given in a detailed paper available in public domain in the website www.dgfasli.nic.in)

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CONSULTANCY/RESEARCH

OCCUPATIONAL HEALTH STUDY IN A PESTICIDE AND FORMULATION FACTORY

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

OBJECTIVE

The aim and objective of the study was to obtain an integrated picture of Occupational Health and working conditions of the Pesticide workers and to identify specific occupational health disorders. It was also aimed to put before the management, the required preventive and control measures derived out of and based on medical findings, for implementation by the management so as to improve upon the occupational well being and working conditions of the workers.

ABOUT THE FACTORY

Unit -1 of this factory was engaged in formulation of the technical pesticides into dusting powders, granules and liquid pesticides through BATCH-PROCESS. Unit-2 was carrying out in addition to the formulation, the manufacture of technical grade pesticides. The nature of the task involved mixing, grinding, packing and handling of pesticide chemicals. The products manufactured and formulated included mostly the organophosphorus pesticides such as quinalphos, dimethoate, monocrotophos and chlorpyrifos. Organochlorine, carbamates and synthetic pyrethroids groups of pesticides were also produced in small quantities. The company had a disposal arrangement for the Pesticide liquid wastes through the process of SOLAR EVAPORATION.

METHODOLOGY

A total of 84 workmen from Unit-1 and Unit -2 were drawn from the exposed subjects of categories skilled, unskilled and supervisors. A sample of non-exposed control subjects was also selected for comparison. The selected workers were subjected to detailed clinical examination including special diagnostic tests such as lung function tests,

ECG and blood test to measure cholinesterase enzyme activity. The Indian insurance standard was used to assess the weight for height of the individuals. The ILO/WHO recommended staging criteria were used to categorize the affected individuals due to pesticide exposure and the WHO-HAZARD-CLASSIFICATION was used to classify the pesticides that caused the toxicity. Relevant Spiro metric guidelines were used to assess lung function performance of the workers and the measurement of BCA activity in the blood as percentage of normal individuals was done by Levi-bond method in order to assess the exposure levels of the workers.

RESULTS

In the present study, 19% of individuals were identified affected with Stage 1 or Stage -2 of OPP toxicity satisfying the ILO/WHO STAGING CRITERIA RECOMMENDATIONS. The most common morbid conditions observed in the workers were found to be weight loss, abdominal pain, exaggerated/brisk tendon reflexes, headache, tremors of hands/fingers and constricted pupils.

RECOMMENDATIONS

16 number of workmen showing reduction of their BCA activity levels in blood were asked to be put under MEDICAL SUPERVISION and follow up at periodic intervals as a protective step. Recommendations were also made for reduction of their exposure levels by suitable JOB-ROTATION, provision of PPE's and strict enforcement of simple rules of personal hygiene. Provision of adequate first aid facilities and availability of specific ANTIDOTES were also stressed upon. It was also advised to send the full time medical officer for acquiring the AFIH qualifications so as to enable the FMO in carrying out his functions more effectively and as per guidelines prescribed under relevant factory rules. Specific decontamination measures, protection of the environment, treatment of liquid wastes and training of workers for safe handling procedures were also advocated.

FATAL ACCIDENTS IN PORTS

On 14.8.2004, a tipper lorry loaded with coal was moving towards the weigh bridge for weighment at a port. After moving ahead near the weigh bridge, the driver noticed a long queue of trucks on his side and realized that he had to fall in queue for which he reversed his truck in order to join the end of the queue. While reversing the truck, a cleaner of another truck who was passing by was struck resulting in his death.

Investigation of the accident revealed that there was no proper regulation of traffic in the weighbridge and there was heavy congestion. The driver of the tipper lorry and his cleaner were also negligent, as they did not see back while reversing the vehicle. The driver and the cleaner were issued with a show cause notice for their negligence and further the port authorities were advised to ensure proper regulation of traffic at the weighbridge and to adopt proper control measures. The port authorities were also advised to use separate weight bridges for lorries moving within the port and for lorries going out of the port to avoid congestion and long queues.

On 20th May 2004, a trailer who was carrying granite stones had entered a port and was waiting in the queue. The trailers in the queue were moving forward with intermittent stopping. At about 11.30 hours, a trailer ran over the cleaner of the same trailer who was sleeping underneath, resulting in his death.

Investigation of the accident revealed that primary cause of the accident was the negligence on the part of the cleaner who took rest under the trailer. The driver of the trailer was also responsible as he failed to ensure the whereabouts of his cleaner before moving the trailer. The driver of the trailer was issued show cause notice through his employer. Further, the port authorities were advised to discuss the above accident with the transporters and other port users in the meeting and devise suitable methods to avoid such accidents.

EDUCATION & TRAINING

TRAINING PROGRAMME ON INDUSTRIAL FATIGUE, ITS EVALUATION & MANAGEMENT FOR IMPROVING SAFETY, HEALTH AND INCREASED PRODUCTIVITY AT WORK.

PROGRAMME PERSPECTIVE

Industrial fatigue is one of the oldest shop floor hazards from time memorial. The concept of fatigue was very much prevalent during ancient times. Mankind did not know the cause effects 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 and nature of fatigue is complex. Because of these problems in shop floor, 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 total fatigue has both the components.

The contribution of "Fatigue Research Board" of U.K. is one of the early actions in the field of fatigue research. It is a silent killer having many physical and psychological manifestations involved in it. A multi-disciplinary approach is applied to design, understand and combat the industrial fatigue related problems.

OBJECTIVE

To familiarize with

- The understanding of the complex interaction of fatigue.
- The identification of the cause- effects relationship of fatigue.

- The differentiation of the psychological and physiological fatigue.

HIGHLIGHT

- Identification of physical and physiological factors of fatigue.
- Evaluation of fatigue
- Management of fatigue in industry
- Correlation of fatigue with all factors.

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 and Ventilation Engineers, Dentists, Audiologists, Pharmacists, Policy Planners, Sr & Middle Management Personals, Union Leaders, Transport & Railway officials, Workers, Laboratory Technicians, Plant Supervisors, Plant Medical Officers, ESIC doctors, Paramedical personnel, Physical Therapists, Speech Therapists and Physio Therapists, Inspector of Factories, Academicians and one and all concerned with occupational health.

FACULTY

Experts from the Central Labour Institute, Mumbai and a few guest speakers who have specialised knowledge in the respective field.

Conducted by:

**Industrial Physiology Division
Central Labour Institute
N.S. Mankikar Marg
Sion, Mumbai – 400 022.**

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: Anxiety sensitivity and depression in multiple chemical sensitivities and asthma.

CIS ACCESSION NUMBER

CIS 03-186

ABSTRACT

Patients with sensitivities to multiple chemicals report symptoms of cognitive dysfunction, respiratory distress and mood disturbance. Lifetime and current psychiatric disorders, personality traits associated with symptom reporting and tests of cognitive function were compared between 30 subjects with multiple chemical sensitivities (MCS), 19 asthmatics and 31 healthy controls. When compared with asthmatics and controls, more MCS subjects met criteria for current depression and somatization disorder. MCS subjects and asthmatics scored significantly higher than controls on scales of chemical odour intolerance and anxiety sensitivity, both of which were significant predictors of physical symptoms. Few differences on objective neuropsychological tests were noted. However, MCS subjects with co-morbid depression performed significantly worse on a verbal memory test relative to asthmatics but not to controls.

Note:

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

MSDS

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

PRODUCT NAME: ETHANOL

Hazards Identification

Physical state: Liquid.
Color: Colorless.

Emergency overview: Warning! Flammable liquid and vapor. May cause eye irritation. May cause respiratory tract irritation. If swallowed, may cause headaches, dizziness, drowsiness and nausea, and may lead to unconsciousness. Do not ingest. Avoid contact with skin and clothing. Do not breathe vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

POTENTIAL HEALTH EFFECTS

Eyes: May cause eye irritation.

Skin: Unlikely to cause appreciable irritation even on repeated contact. Unlikely to be absorbed in harmful amounts.

Inhalation: May cause respiratory tract irritation. Inhalation may cause headaches, dizziness, drowsiness and nausea.

Ingestion: Swallowing may have the following effects: Central nervous system depression, nausea/vomiting and symptoms similar to alcohol intoxication.

First Aid Measures

Eye Contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops.

Inhalation :If inhaled, remove to fresh air. Get medical attention if symptoms appear.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately.

Handling and Storage

Handling: Keep container closed. Use only with adequate ventilation. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding container and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

Storage: Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Toxicological Information

Acute toxicity: Acute oral toxicity (LD50): 3450 mg/kg (Mouse) (Ethanol).

Chronic toxicity: No component of this product at levels greater than 0.1% is identified as a carcinogen by ACGIH or the International Agency for Research on Cancer

MSDS

(IARC). No component of this product present at levels greater than 0.1% is identified as a carcinogen by the U.S. National Toxicology Program (NTP) or the U.S. Occupational Safety and Health Act (OSHA).

Reproduction toxicity: Classified
Reproductive system/toxin/female,
Reproductive system/toxin/male[proven]
[ethanol].

Other information: Irritancy - Skin: A single 4h semi-occlusive application to intact rabbit skin produced minimal signs of irritation (mean scores for erythema or oedema less than 2).

Irritancy - Eye. The eye irritancy has been investigated by OECD Test method 405. Single application to the rabbit eye produced conjunctival irritation and transient corneal damage. The effect was insufficient to warrant classification as an eye irritant.

Sensitization: The material is not sensitizing in standard animal tests. In rare cases non-irritant contact dermatitis has been identified in humans after skin exposure to this material. Such cases have been identified as delayed hypersensitivity or as urticarial reactions. In reactive individuals such reactions may also be elicited by drinking alcoholic drinks or by cross reaction to certain other alcohols.

Sub-acute/Subchronic Toxicity: It has been shown in many animal experiments that the repeated oral consumption of large doses of ethanol can lead to damage in practically all organ systems. The main manifestations of the toxic effects are shown by the liver.

Chronic toxicity/carcinogenicity: No convincing evidence of carcinogenic effects in animal studies.

Genotoxicity : The product has been tested in a number of bacterial and mammalian systems. The product did not exhibit mutagenic activity in the following systems (with and without metabolic activation):

Drosophila. *Salmonella typhimurium*. Human lymphocytes in vitro. Most in vitro tests and all in vivo tests for chromosome aberrations report negative results. The product did not induce micronuclei in standard bone marrow tests in vivo. There is some evidence that ethanol induces SCE in vivo and can also act as an aneugen at high doses. Overall, there is no robust evidence that ethanol is an genotoxic hazard according to the criteria normally applied for the purpose of classification and labelling of industrial chemicals.

Reproductive/Developmental Toxicity : Adverse effects on the male reproductive system have been reported in laboratory animals following repeated exposure to high concentrations. Developmental effects have been observed in laboratory animals following large oral exposures.

Human data: In humans excessive consumption of alcoholic beverages during pregnancy is associated with the induction of Fetal Alcohol Syndrome in the offspring. Reduced birth weight and physical and mental defects occur. There is no evidence that such effects might be caused by exposures other than direct ingestion of alcoholic drinks. In humans high lifetime consumption of alcoholic beverages can be associated with certain cancers and effects on the liver. There is no evidence that these can be caused by exposure other than direct ingestion of alcoholic drinks (IARC 1988).

NOTE

The above details constitute part information of MSDS taken from Canadian Centre for Occupational Health and Safety. For complete MSDS write to MIS division, Central Labour Institute, Sion, Mumbai.400022. MSDS on about 1,20,000 chemicals/materials are available with Central Labour Institute. Computer printout will be supplied on nominal charge basis.

**ONE MILLION KIDS WORK IN MINES,
QUARRIES:ILO**

The International Labour Organisation (ILO) estimates that there are one million children aged between 5 and 17 currently toiling in mines and quarries all over the world.

The organization, observing the world day against child labour on Sunday, maintained that the focus this year is on the elimination of children employed in small scale mines and quarries. It said that a majority of these mines and quarries are not mechanized and operate without adequate tools or safety measures for the workers.

The work exposed children to the risk of death and injury from tunnel collapse, accidental explosions, rock falls, exposure to toxic substances such as mercury and lead, and chronic health conditions such as silicosis, ILO experts point out.

In some cases, children work in mines as deep as 90 metres with only a suspending rope to climb in and out, inadequate ventilation and only a flashlight or candle for light. In many small mines, child workers dig and haul heavy loads of rock, dive into rivers and flooded tunnels in search of minerals, set off explosives for underground blasting and crawl through narrow tunnels only as wide as their bodies.

In quarries, children dig sand, rock and dirt, transport it on their head and back and spend hours pounding large rocks into gravel to be used for construction material for roads and buildings. Since these mines and quarries are mostly located in remote areas, the sites are difficult to regulate, ILO sources told TOI.

“Children who work in mines and quarries are risking their health and safety and indeed their lives and action must be taken now.” ILO Director General Juan Somavia said in a statement that child labour in mines and quarries can be eliminated was successfully demonstrated in 1999 through a joint project by ILO and Andhra Pradesh government. In the state’s Prakasam district, where slate mining is the prime occupation, 4,584 children were involved in mining activities. The project reduced the involvement of child labour to 242.

Meanwhile, ILO sources said that at least 14 countries are expected to sign an accord committing themselves to the elimination of child labour in small mines and quarries in a “time bound” manner.

Source: Times of India.

ANNOUNCEMENTS

**TRAINING PROGRAMMES
OCTOBER-DECEMBER 2005
CENTRAL LABOUR INSTITUTE, SION,
MUMBAI-400 022**

Programme title	Contact person
Diploma in Industrial Safety	Director (Safety) & Incharge Incl. Safety Division
Basic course for Inspectors of Factories	Director (Safety) & Incharge Incl. Safety Division
Occupational Physiology – its application in Industry for promotion of Safety, Health & Productivity.	Director (Physiology) & Incharge Incl. Physiology Division
Anthropometry for better work station design for improving Safety, Health & Productivity.	Director (Physiology) & Incharge Incl. Ergonomics Division
Industrial Fatigue – its evaluation and management for ensuring Safety, Health & Productivity at Work	Director (Physiology) & Incharge Incl. Physiology Division
Workshop on safe handling of chemicals for Safety Committee Members of hazardous industries	Director (Incl. Hygiene) & Incharge Major Accident Hazard Control Advisory Division
Management of Occupational Stress for ensuring Safety, Health & Productivity at Work.	Director (Physiology) & Incharge Incl. Physiology Division
Need for Illumination in industries & their health hazard and control in industry	Director (Physiology) & Incharge Environmental Engg. Division
Evaluation of Chemical Hazards and Control	Director (Incl. Hygiene) & Incharge Incl. Hygiene Division
Training Programme on Industrial Safety for National Safety Council Members -Maharashtra Chapter	Director (Safety) & Incharge Incl. Safety Division

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Handling problem behaviour of employees	Director (Incl.Psychology) & Incharge Incl.Psychology Division
Productivity & Quality Improvement through Effective Employees Participation	Director (Staff Trg./Productivity) & Incharge Productivity Division
Industrial fitness, a key to improve Safety, Health & Productivity at work	Director (Physiology) & Incharge Incl.Psychology Division
Selection and quality assurance for effective use of Personal Protective Equipment	Director (Incl.Hygiene)&Incharge Incl.Hygiene Division
Training Methodology for Trainers	Director (Staff Trg.) & Incharge Staff Training Division
Training Programme on Safety Engineering & Management	Director (Safety) & Incharge Incl. Safety Division
Advanced training programme on Occupational Health & Environmental Medicine for Doctors/Factory Medical Officers.	Director (Medical) & Incharge Incl. Medicine Division
Safety, Health & Environment Management in Process Industries	Director (Incl.Hygiene) & Incharge Major Accident Hazard Control Advisory Division
Occupational back pain - its evaluation & management for Safety, Health & Productivity.	Director (Physiology) & Incharge Incl.Psychology Division
Wage & Salary Management for business competitiveness	Director (Staff Trg./Productivity) & Incharge Productivity Division
Safety, Health & Environment Management at workplace	Director (Incl.Hygiene)&Incharge Incl.Hygiene Division
Effective leadership for Safety, Health & Productivity	Director (Incl.Psychology) & Incharge Incl.Psychology Division
Occupational Health Hazards in use of computers & VDT-its evaluation & management for ensuring Safety, Health & Productivity.	Director (Physiology) & Incharge Incl.Ergonomics Division
Physiological basis of manual material handling for Accident Prevention at Work.	Director (Physiology) & Incharge Incl.Psychology Division

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**TRAINING PROGRAMMES
OCTOBER-DECEMBER 2005
REGIONAL LABOUR INSTITUTE , NO.1,SARDAR PATEL ROAD
ADYAR, CHENNAI-600 113**

Programme title	Contact person
Diploma in Industrial Safety	Director Incharge
Training Programme on Major Accident Hazard Control in industries	Director Incharge
Certificate course in Safety & Health for Supervisory Personnel engaged in Hazardous processes.	Director Incharge

**TRAINING PROGRAMMES
OCTOBER-DECEMBER 2005
REGIONAL LABOUR INSTITUTE , LAKE TOWN
KOLKATA-700 089**

Programme title	Contact person
Diploma in Industrial Safety	Director Incharge
Training programme on Safety Audit	Director Incharge
Training programme on Safety & Health for workers	Director Incharge
Specialised certificate course for Supervisors engaged in Hazardous Industries.	Director Incharge
Refresher course on Occupational Health for Plant Medical Officers	Director Incharge
Training programme on Chemical Safety	Director Incharge

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**TRAINING PROGRAMMES
OCTOBER-DECEMBER 2005
REGIONAL LABOUR INSTITUTE , SECTOR 19
FARIDABAD**

Programme title	Contact person
Managing human factors in Occupational Safety & Health	Director Incharge
Managing Safety at work	Director Incharge

**TRAINING PROGRAMMES
OCTOBER-DECEMBER 2005
REGIONAL LABOUR INSTITUTE, SARVODAYA NAGAR
KANPUR- 208 005**

Programme title	Contact person
Training programme on effective Supervision for managing Safety & Health at work	Director Incharge
One month certificate course on Safety & Health	Director Incharge
Training programme on Safety and the Law	Director Incharge
Training programme on Industrial Safety & Health	Director Incharge

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ANNOUNCEMENTS

इंडोश्नेट

भारत सरकार का श्रम एवं रोजगार मंत्रालय व्यवसायिक सुरक्षा और स्वास्थ्य सूचना प्रणाली पर इंडोश्नेट नामक राष्ट्रीय नेट वर्क का विकास कर रहा है। श्रम मंत्रालय का एक संबद्ध कार्यालय, कारखाना सलाह सेवा एवं श्रम संस्थान महानिदेशालय इस नेट वर्क प्रणाली के सफल कार्यान्वयन में सहायता देता है। इस नेट वर्क का उद्देश्य व्यवसायिक सुरक्षा और स्वास्थ्य संबंधी राष्ट्रीय जानकारी सुदृढ़ करना और लाभहानि रहित आधार पर इसका आदान-प्रदान करना है ताकि हमारे समग्र सूचना स्रोतों का परस्पर लाभ के लिए उपयोग हो सके। आपस में सूचना या जानकारी की यह सहभागिता केवल राष्ट्रीय स्तर तक ही सीमित नहीं होगी बल्कि इसमें अंतर्राष्ट्रीय स्रोत भी शामिल होंगे। इस जानकारी का आदान-प्रदान ई-मेल के साथ-साथ डाक/कुरियर सेवा द्वारा किया जाएगा। यदि औद्योगिक संगठनों, संस्थानों, उद्योग संघों, मजदूर संघों, व्यवसायिक निकायों और गैरसरकारी संगठनों के पास व्यवसायिक सुरक्षा स्वास्थ्य संबंधी कोई जानकारी हो और वे राष्ट्रीय और अंतर्राष्ट्रीय स्तर पर उक्त जानकारी बाँटना चाहते हों तो कारखाना सलाह सेवा एवं श्रम संस्थान महानिदेशालय की ओर से इस नेट वर्क के सदस्य के रूप में भाग लेने के लिए उनका स्वागत है। इच्छुक इकाइयाँ संगठनात्मक रूपरेखा संबंधी प्रोफार्मा के लिए महानिदेशक, कारखाना सलाह सेवा एवं श्रम संस्थान महानिदेशालय, केंद्रीय श्रम संस्थान भवन, एन.एस.मंकीकर मार्ग, सायन, मुंबई-४०० ०२२ से संपर्क करें।

टिप्पणी : जिन इकाइयों ने हमारे पहले आग्रह के संदर्भ में संपर्क किया है और निर्धारित प्रोफार्मा में रूपरेखा भेज दी है, वे दुबारा आवेदन न करें।

नेशनल रेफरल डायग्नोस्टिक सेंटर

भौतिक, रासायनिक, जैविक तथा मनो-सामाजिक जैसे विभिन्न कारणों से कामगारों पर होने वाले विपरीत स्वास्थ्य प्रभावों की रोकथाम और नियंत्रण करने के लिए व्यावसायिक स्वास्थ्य विकार और व्यावसायिक रोगों की शीघ्र पहचान और उसका निदान एक प्रमुख पहलू है। व्यावसायिक रोगों का शीघ्र पता लगाने और निदान करने के लिए केंद्रीय श्रम संस्थान, मुंबई के औद्योगिक चिकित्सा प्रभाग के अधीन 'नेशनल रेफरल डायग्नोस्टिक सेंटर' कार्यरत है जो व्यावसायिक स्वास्थ्य समस्याओं / व्यावसायिक रोगों की रोकथाम / नियंत्रण के लिए आवश्यक उपाय सुझाता है। प्रभावित कामगारों की चिकित्सीय जाँच के लिए यह निदान केंद्र पूर्णतया सज्जित है और यहाँ श्वास/धमनी संबंधी जाँच, श्रव्यता मापन, ई.सी.जी., टिट्मस दृष्टि जाँच, जैविक निगरानी आदि के लिए सुविधाएँ उपलब्ध हैं। कारखाना चिकित्सा अधिकारी, ई.एस.आई. डॉक्टर, कारखानों के चिकित्सा निरीक्षक सहित व्यावसायिक चिकित्सक तथा मेडिकल कॉलेज और अस्पतालों के प्रमाणित शल्य चिकित्सक और डॉक्टर व्यावसायिक रोगों के संदेहास्पद रोगी निदान और परामर्श के लिए इस केंद्र में भेज सकते हैं। इस मामले में अधिक जानकारी के लिए महानिदेशक, कारखाना सलाह सेवा एवं श्रम संस्थान महानिदेशालय, केंद्रीय श्रम संस्थान भवन, एन.एस.मंकीकर मार्ग, सायन, मुंबई-४०० ०२२ से संपर्क करें।

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.

'इन्डोश्न्यूज़' एक त्रैमासिक समाचार पत्र है जो व्यावसायिक सुरक्षा और स्वास्थ्य के क्षेत्र में अनुसंधान, अध्ययन और सर्वेक्षण के माध्यम से उपलब्ध जानकारी तथा तत्संबंधी विचार विनिमय में अत्यंत सहायक है। कारखाना सलाह सेवा एवं श्रम संस्थान उन व्यक्तियों, उद्योगों, औद्योगिक संगठनों, मज़दूर संघों और व्यावसायिक निकायों से लेख आमंत्रित करता है जिनके पास व्यावसायिक सुरक्षा एवं स्वास्थ्य संबंधी जानकारी है तथा जो उसे स्वेच्छा से दूसरों में बाँटना चाहते हैं।

१. प्रकाशन के लिए पांडुलिपि की दो प्रतियां 'डबल स्पेस' में ए-४ आकार के कागज़ पर एक ओर टाइप किए गए लेख जो ३ या ४ पृष्ठ से अधिक न हों, मुख्य संपादक के पास भेजी जानी चाहिए। कोई फ़ोटो छपा नहीं जाएगा।
२. प्रकाशन के लिए स्वीकृत पांडुलिपियों में प्रकाशन की दृष्टि से आवश्यक संपादकीय परिवर्तन करने का अधिकार प्रकाशक का है। प्रकाशक बिना कोई कारण बताए लेख का प्रकाशन नहीं भी कर सकता है।
३. लेखक अपने लेख में दिए गए आँकड़े तथा संदर्भ स्वयं सुनिश्चित करने में सावधानी बरतें।

ANNOUNCEMENTS

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.**

ANNOUNCEMENTS

भारत सरकार, श्रम एवं रोज़गार मंत्रालय कारखाना सलाह सेवा एवं श्रम संस्थान महानिदेशालय

कारखाना सलाह सेवा एवं श्रम संस्थान महानिदेशालय (डीजीफासली) भारत सरकार के श्रम एवं रोज़गार मंत्रालय का एक संबद्ध कार्यालय है। कारखानों और गोदी में व्यावसायिक सुरक्षा और स्वास्थ्य संबंधी नीति बनाने के लिए तथा कार्य स्थलों पर कामगारों की सुरक्षा, स्वास्थ्य, दक्षता संबंधी मामलों पर राज्य सरकारों और कारखानों को परामर्श देने की दृष्टि से १९४५ में भारत सरकार के श्रम मंत्रालय के अधीन डीजीफासली की स्थापना की गई थी। यह महानिदेशालय देश के प्रमुख पत्तनों में सुरक्षा एवं स्वास्थ्य संबंधी नियम भी लागू कराता है।

कारखाना सलाह सेवा और श्रम मंत्रालय संस्थान महानिदेशालय इंडीजीफासलीट के निम्नलिखित अंग हैं:

- मुम्बई स्थित मुख्यालय;
- मुम्बई स्थित केंद्रीय श्रम संस्थान और
- कोलकाता, चेन्नई, फरीदाबाद और कानपुर स्थित क्षेत्रीय श्रम संस्थान।

मुम्बई स्थित केंद्रीय श्रम संस्थान समाजार्थिक प्रयोगशाला के रूप में कार्य करता है और यह मानवीय पहलुओं से संबंधित औद्योगिक विकास के सभी पक्षों के वैज्ञानिक अध्ययन का एक राष्ट्रीय संस्थान है।

पिछले कई वर्षों में केंद्रीय श्रम संस्थान का केवल आकार की दृष्टि से ही नहीं बल्कि महत्ता की दृष्टि से भी विकास हुआ है और इसने राष्ट्रीय तथा अंतर्राष्ट्रीय स्तर पर मान्यता प्राप्त की है। एशिया और पैसिफिक क्षेत्र में व्यावसायिक सुरक्षा और स्वास्थ्य पर सर्वोत्कृष्ट प्रशिक्षण केंद्र के रूप में अंतर्राष्ट्रीय श्रम संगठन ने मान्यता प्रदान की है। यह सीआईएस अंतर्राष्ट्रीय व्यावसायिक सुरक्षा और स्वास्थ्य सूचना केंद्र टके राष्ट्रीय केंद्र तथा राष्ट्रीय सुरक्षा एवं स्वास्थ्य जोखिम सतर्कता प्रणाली के केंद्र के रूप में कार्य करता है। राष्ट्रीय स्तर पर सरकार को अनुसंधान और प्रशिक्षण सुविधा उपलब्ध कराने और श्रम मंत्रालय के तकनीकी सहायक के रूप में कार्य करने के अलावा यह संस्थान अध्ययन, तकनीकी परामर्श, प्रशिक्षण और सूचना प्रसार के माध्यम से औद्योगिक पत्तन सेक्टर को गहन और बहु-आयामी सेवा उपलब्ध कराता है। इसके अधीन, व्यावसायिक विकारों की शीघ्र पहचान और उसके नियंत्रण और रोकथाम के लिए रेफरल डायग्नोस्टिक सेंटर कार्यरत है। सुरक्षा और स्वास्थ्य से संबंधित स्तरीय यू-मैटिक वीडियो फिल्मों के निर्माण के लिए परिष्कृत उपकरणों से सज्जित एक आधुनिक ऑडियो विजुअल स्टूडियो उपलब्ध है। केंद्रीय श्रम संस्थान के लघु रूप में क्षेत्रीय श्रम संस्थान हैं जो अपने संबद्ध क्षेत्रों की आवश्यकता पूरी करते हैं।

निरंतर बढ़ती माँग को देखते हुए, इस संगठन का आगे विकास हो रहा है। किसी विकासशील देश में विभिन्न और जटिल प्रकृति के उद्योगों की बढ़ी संख्या को देखते हुए, कामगारों की सुरक्षा और स्वास्थ्य एक चुनौतीपूर्ण कार्य है। तकनीक, औद्योगिक समाज की साख और समर्पित कर्मचारियों से सज्जित यह संगठन भविष्य की चुनौतियों का सामना करने में सक्षम है। कार्य स्थल सुरक्षित बनाने के अपने लक्ष्य के लिए यह संगठन प्रतिबद्ध है।

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ABOUT DGFASLI

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 recognised by the International Labour Organisation as a Centre of Excellence in training on Occupational Safety and Health in the Asian and Pacific Region. It also functions as a National Centre for CIS (International Occupational Safety and Health Information Centre) and the Centre for National Safety and Health Hazard Alert System. At the national level, apart from providing research and training support to the Government and functioning as a technical arm of the Ministry of Labour, the institute provides comprehensive and multi-disciplinary services to the Industrial Port sector through studies, technical advice, training and dissemination of information. It also runs National Referral Diagnostic Centre for early detection of occupational disorders and thereby controls and prevents them. It has a modern Audio Visual Studio fully equipped with sophisticated video production equipment to produce quality U-matic video films on Safety and Health. The Regional Labour Institutes are a scaled-down version of the Central Labour Institute and cater to the needs of their respective regions.

The 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.

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