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Recommendations to Protect the Health of Sugar Industry Employees From Occupational Hazzards

KEYWORDS

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ABSTRACT *Sugar industry is the largest agro based industry plays a key role in economy of Maharashtra state. Assessment of many sugar industries, indicates that the working and living conditions was quite adverse. The optimum level of health status of these workers is difficult to maintain. In sugar industry workplace environment and working conditions are quite adverse. The optimum level of health status of these workers is difficult to maintain. High intensity noise, excessive heat, high concentration of clay dust, bagasse dust, sugar dust, inadequate illumination,inadequate space glare, toxic fumes of sulphur dioxide gas, lime, NOx, bacteria, fungal spores, shift work, night shift, excessive workload, awkward posture, Stress due to manual material handling are some of the important stress factors to which sugar industry worker is exposed. In present investigation many sugar industries are assessed for the study of occupational stress factors. Based on above the observations the recommendations are suggested to improve the health status of the sugar industry worker.*

Introduction

The major types of environmental stresses in sugar industry are: physical agents, biological agents, chemical agents and other work place conditions, as well as psychological factors. These my act either singly or in combination. The environmental and human factors may interact to produce accidents. Occupational diseases and injuries result from specific exposures at work. In addition, work exposures may aggravate certain illness or be a factor of varying importance in causing diseases if multiple etiology. The point to be noted is that in industry the decision makers and management does not accept responsibility for the occupational hazards that affect the workers.

In the factories Act, 1948, there are provisions for providing the personal protective equipment to the workers who are exposed to the unsafe and unhealthy environment. These provisions of law relating to the use of personal protective equipment are made with a view to protect the industrial worker against possible hazards. It is also the intention of law that these personal protective equipment's shall be of such type and made of such material that it withstand to such specific hazards for which it is actually being used and to make the industry safe for those who are engaged in it and also to ensure that the industry does not adversely affect the society. During the recent years ,much emphasis is laid upon the occupational stresses that the workers face in the different industries.

Martials and Methods

Martials

Many sugar industries from Sangli district were assessed for the study of occupational stresses.

Methods

The sampling of dust was done by high volume sampler. Sound level at various sub departments was recorded by sound level meter in decibel(dB).Recording of thermal data such as dry bulb temperature was made in different sections during working hours.The sampling of sulpher dioxide was done by Sodium TetrachloromercurateMethod.Nitrogen oxides as nitrogen dioxide are collected by bubbling air through a sodium hydroxide solution to from a stable solution of sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically by reacting the exposed absorbing reagent with phosphoric acid, sulphanilamide and N (t – naphthyl) ethylene diaminedihydrochloride.The method is applicable to collection of 24 hours samples in the field and subsequent analysis in the laboratory.

RESULT AND DISCUSSION

It was found that the working and living conditions are quite adverse. The temperature level in various processing units ranges from 40 to 43^{0c} and workers working in vicinity to machineries. Hot environment increases oxygen consumption, pulmonary venitation and decrease work performance reported by Gupta et.al.(1981). The noise level ranges from 91 to 105 dB which succeeds the limits prescribed by WHO and BIS.Enviromnetal noise is known stress which induces alterations of various physiologic responses in individuals exposed to it(Shankar et. al.1999) In present investigation it has been significantly observed that there is high concentration of respirable dust 182 µq/Nm^3 to 415µq/Nm^3 which gives rise to various degree of respiratory impairments among workers.Bobson (2001) has reported that about 250 substances in workplace can cause occupational respiratory disorders. The concentration of nitrogen oxide ranged up to 105.54µg/Nm^3 CarlZenz(1994) reported 300000 tons of nitrogen oxide are produced annually from industrial processes. The concentration of sulphurdiaoxide near sulphur furnace found to be high up to 87.17 54µg/Nm^3. Increase in concentration of sulphur dioxide above permissible limits causes suffocation and irritation of throat an eye. Repeated exposure to 10ppm concentration of sulphur dioxide results into upper respiratory irritation (Federal,1975).With the above observations suitable recommandations are provided as follows.

RECOMMENDATION CHART

TYPE OF PROTECTION	HAZARD	RECOMMENDED SAFETY APPLIANCES
HAND PROTECTION	a) Chemical Spurting	i) Glass Fibre Reinforced Helmet
	b) Falling objects	ii) Glass Fibre Reinforced Helmet with Acrylic face shield
	c) Electric shock	iii)Non-Conductive Helmet
FACE PROTECTION	a) Frontal Hazards against chemical splash or flying objects	i) Face shief with or without peak

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	b) Frontal hazards including hazard to ear and neck	ii) Full cover Acrylic face shield
EYE PROTECTION	a) Chemical splash or dust	i) Rubber splash goggle with indirect ventilations
	b) Eye irritating gases	ii) Wide view safety goggle
	c) Flying particles	i) General purpose spectatcle type goggles with plastic lenses and side protections
		ii) General purpose spectacles type goggles with toughened glasses and side protections
		iii) Visor clear
		iv) Face shields
		v) Leather mask goggles
		vi) Cup type goggles
	e) Welding and cutting	i) Focal type goggle with correct coloured lens filter
		ii) Leather mask goggle with correct coloured lens filter
		iii) Box type welding goggles
		iv) F.R.P. welding helmet

TYPE OF PROTECTION	HAZARD	RECOMMENDED SAFETY APPLIANCES
	Filter glasses should have shades as follows :	
	Spray flashes and reflected radiation from cutting and welding	Shade No. 4
	For light gas welding and cutting	Shade No. 5
	Gas welding and cutting using current values upto 30 amperes	Shade No. 6 and 7
	Heavy gas cutting and non-gas shielded arc welding using current values from 30 to 75 amperes	Shade No. 8
	Arc welding and cutting using current values from 75 to 200 amperes	Shade No. 10
	Arc welding and cutting using current values from 200 to 400 amperes	Shade No. 12
	Arc welding and cutting using current values over 400 amperes (including carbon arc welding and cutting) and for atomic hydrogen welding	Shade No. 14
	i) For removing steel particles from eyes	Eye Magnet

EAR PROTECTION	High level noise above 100 decibels	i) Ear safety Mu ii) Ear Plugs

TYPE OF PROTECTION	HAZARD	RECOMMENDED SAFETY APPLIANCES

LEG	a) Sparks, heat	Legging and legguard made from Asbestos, Chrome leather Flame Proofed Duck
	b) Hat-metals	Asbestos, chrome leather and flame proofed duck
	c) Cuts and abrasions	Chrome leather
	d) Hot-liquids	Chrome leather, rubber, plastic and reflective fabrics
	e) Acids and Alkalies	Chemical resistant fabrics, plastic and rubber

FOOT	a) Falling and striking objects	Shoe and boot with steel toe caps
	b) Hot materials, moisture, heat, hot liquids, acid and alkalies, slips and falls cuts and abrasion	Non-skid shoes and safety shoes with wood sole
	c) Sparks, hot-materials and hot liquids	Chrome leather safety shoe
	d) Hot-liquids, moisture acid and alkalies, dermatitis	Rubber shoe with or without steel toe
	e) Electric shock	Non-conductive rubber shoes without steel toe
LUNG	Respirable dust particles clay, Face masks Bagasse, sugar	

BODY PROTECTION	a) Fire	i) Fire repel GR suit ii) Asbestos fire suit
	b) Chemicals	Acid resisting evynil combination suit
	c) Hot metal	GR Apron

Health and safety standards and regulations must be complied with a proper safety programme for with trained staff is responsible to ensure the safety of the workers should be in place.

The most stressful factors in occupational environment of sugar industry are dust, heat, noise,vibrations and toxic fumes, for that the improvement of hygienic norms is necessary to create the environment for productiveand qualitative labour and for the mentainance of the health status of the worker.

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