

Occupational health hazards: Importance of use of personal protective equipments

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Abstract

There are hazards and risks in all work places. Safety and health are possibly ensured only by knowing these risks and hazards and by properly guarding ourselves until the risks and hazards have been eliminated. Technological progress and change are constantly taking place and while they often bring improvements in both efficiency and safety at work, they also can create new risks and hazards. This paper aims at studying the importance of Personal Protective Equipments to prevent the risks posed by hazards in the tanning industry.

Keywords: Industrial health Hazards, Hazards, Personal Protective Equipments

1. Introduction

Industrial illness normally develops over a period of time because of workplace conditions. Such conditions might include exposure to disease-causing bacteria and viruses or due to chemicals or dust.

Under the Occupational Health and Safety Act, occupational illness is defined as a condition that results from exposure in a workplace to a physical, chemical or biological agent to the extent that the normal physiological mechanisms are affected and the health of the worker is impaired.

Types of Hazards

The following are the types of hazards prominent in the industry.

1. Accident Hazards

- a) Slips, trips and falls on the level, especially on wet, slippery or cluttered floors, while moving heavy loads such as containers of chemicals, bundles of hides, skin, leather, etc.
- b) Electric shocks caused by contact with defective electric machinery.
- c) Blows and crushing injuries caused by rotating or moving parts of machinery.
- d) Acute poisoning and/or chemical burns by inhalation, ingestion or skin contact with constituents of tanning process liquors, or poisonous gases released during the tanning process (e.g., hydrogen sulfide).
- e) Burns caused by contact with hot surfaces or splashes of hot solutions.
- f) Cuts and stabs caused by manual or mechanized working tools.
- g) Eye injuries caused by flying particles from rotary buffing machines.
- h) Asphyxiation or poisoning in confined spaces, in particular during the cleaning of vats or tanning baths

2. Physical Hazards

- a) Exposure to high noise levels from mechanical equipment.
- b) Callosities on hands caused by continuous strenuous work

with hand tools.

- c) Eyestrain due to poor illumination in the tannery.

3. Chemical Hazards

- a. Skin rashes and dermatosis as a result of exposure to cleaners, solvents, disinfectants, pesticides, leather-processing chemicals, etc.
- b. Allergies caused by many of the chemicals used in Leather Industry.

4. Biological Hazards

Raw hides and skins may be contaminated with a variety of bacteria, molds, yeasts, etc., and various diseases (e.g., anthrax, leptospirosis, tetanus, Q-fever, brucellosis, etc.) may be transmitted to tanners; also, the large quantities of dust produced in buffing operations would normally be contaminated with disease-bearing microorganisms, putrefaction products, etc.

5. Ergonomic, psychosocial and organisational factors

- a) Acute musculoskeletal injuries caused by physical overexertion and awkward posture while moving heavy or bulky loads, in particular bundles of hides, skins and leather.
- b) Low back pain due to prolonged working in a standing or semi-bending posture.
- c) Heat stress, in particular when working on warm days in premises lacking good ventilation or air circulation

Importance of Personal Protective Equipments

The use of personal protective equipment and clothing is an immediate but only short term solution for dealing with health hazards and safety risks at the work place.

The use of personal protective equipment should be only considered as the last and supplementary solution, where it is not possible to completely eliminate or prevent exposure to hazards. The most commonly needed personal protective equipment in tanneries and effluent treatment plants are:-

- Protective clothing (gloves, safety/ shoes/boots, aprons).
- Hearing protection.

- Protective goggles, shields and respirators.

It is the management's responsibility to provide the appropriate personal protection equipment to keep the same in good and clean condition and to replace when necessary. It is the worker's duty to use the personal protective equipment provided by the management.

A) Select the correct personal protective equipment

While numerous types of personal protective equipment are available in the market, selecting the most appropriate and cost-effective one is not an easy task.

i) Respirators

Respirators, covering mouth and nose, prevent the entry of chemicals into the body through inhalation. They need to be worn whenever the concentration of airborne pollutants (dust, vapors, and gases) cannot be reduced to acceptable levels by other means. Important factors to be considered for the correct selection of appropriate respirators are:

- Type of contaminant or contaminants.
- Expected and permissible concentration in the workplace (the latter also called threshold limit value).
- Type of activity of the worker. The respirator must be compatible with hard hats, goggles, other personal protective equipment; the worker must be able to communicate and perform required job duties.
- Acceptability to the workers (comfort, type of activity).
- Proper respirator fit.

The most common respirators required in tanneries for day-to-day operations are air purifying respirators which clean the air by filtering or absorbing contaminants before the respiratory system.

The masks either come in form of half-face masks (covering mouth, nose, and chin) or full face mask. Air-supply respirators provide a continuous supply of uncontaminated air and offer the highest level of respiratory protection. The air is supplied by a pump (air-line system) or a cylinder/tank, containing compressed air. This portable self-contained breathing apparatus (SCBA) is required for entry into any confined space (e.g. man holes, deep pits, underground tanks) where presence of toxic gas (e.g. hydrogen sulphide gas) or lack of oxygen is likely.

ii) Eye protection

Safety glasses and safety goggles protect eyes from chemical splashes and exposure to dust, vapour, mist and fume or other foreign bodies (e.g. splinters). Particular areas of application in tanneries and effluent treatment plants are the handling and dilution of lime and acids/ alkalis.

iii) Hearing protection

Whenever the continuous noise levels cannot be contained below 85 dB (decibel), the hearing of workers has to be protected. In such cases, workers have to be provided with hearing protection such as ear muffs or plugs. Most available hearing protection devices enable reduction of noise by around 25 dB (A)

Wear the hearing protectors as long as you are exposed to high level of noise. Even removing them for a short period of time

can involve risk of damage to hearing.

- Check whether hearing protection device provides a good sealing effect. Loosely worn ear muffs or ear plugs do not protect you.
- Make sure that ear plugs are properly cleaned or replaced to avoid contaminants entering into the ear with the plugs.

iv) Personal protective clothing

To prevent contact with contaminants and to protect the skin, protective clothing such as gloves, aprons, boots, overalls made of water-proof material should be provided and worn in all wet processing areas of the tannery and effluent treatment plant and while handling chemicals.

As in the case of the specific circumstances the respirators should be kept in mind when selecting and providing personal protective equipment. Example - gloves:

- Material of glove (natural rubber, nitrile, neoprene butyl, PVC, cotton, leather).
- Thickness (durability and level of protection).
- Type of grip surface.
- Length (wrist, elbow, full arm) and
- Type of cuff rolled, etc.

In some instances, e.g. involving electricity, special personal protective clothing is required. Before procuring personal protective equipment, check whether personal protective equipment is needed at all in a specific work area. In all cases, make sure that the equipment fits the worker.

B) Maintain Personal Protective Equipment

As with all other equipment in use in tanneries and effluent treatment plants, Personal protective equipment should be properly maintained to ensure its effectiveness and long life.

- Clean, dry and store personal protective equipment in a separate place.
- Replace worn out or damaged personal protective equipment.
- Respirators have to be replaced when the workers notice
- Difficulty in breathing.
- Dizziness or disorient.
- Sensing irritation smell or taste of contaminants.
- Puncture or other damage of the respirator.

C) Promote the use of Personal Protective Equipment

When introducing personal protective equipment workers may be reluctant to use the same because they are not used to personal protective equipment or worried about its implication. They may feel uncomfortable due to prevailing humid and hot work conditions. Training and information will help overcome the resistance more easily.

- Inform the workers about the possible ill-effects of exposure on their health due to not wearing personal protective equipment.
- Remove wrong perceptions about personal protective equipment.
- Clearly instruct workers when and where they have to wear personal protective equipment.

As the worker's well-being at the workplace is the management's responsibility and sometimes exercising supervisory power may be necessary.

Conclusion

Thus Personal Protective Equipments may be used to prevent the occurrence of health hazards in the tanning industry. The workers are continuously exposed to the hazards so it also becomes the responsibility of the employer to safeguard the workers against the hazards.

Reference

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