An Elsevier Indexed Journal ISSN-2230-7346

Journal of Global Trends in Pharmaceutical Sciences

AN OVERVIEW ON WORKPLACE HAZARDS AND SAFETY MANAGEMENT SYSTEM

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ARTICLE INFO

Key Words
Hazards, Safety and Health Management System, Risk Assessment

ABSTRACT

The ideal and proactive identification of hazards in the administrative centre underpins all employment health, protection practice and risk management techniques; consequently it's far important to effective business practices and the health and protection of all organisational limbs. It is a fundamental proper of employees to be comfy at workplace, but working properly relies on identifying danger. If administrator and personnel can't perceive risk then their protection cannot be convinced. Administrator and employees need to have adequate understanding to become aware of risks that cause hazard inside the place of work prior to successful manage of those risks.

INTRODUCTION

Safety and health concepts are inescapable, so action must be needed and it will relyupon the magnitude of the firm, the hazards brought about through its venture, the physicalattribute of the firm, services or products, and the efficacy of its livepositioning. Sound management practices can be homologous by untold characteristics of effectiveprotection and health control, which are cautioned by way of proponents of quality management, business excellence, and environmental safety. Commerciallyhit groups regularly stand out for protection and health management as they follow equal properly planned business information to protection and health management compared to all different strands in their operations. Approach of safety in simple phrases is freedom from the eventuality of risk or harm or loss. Industrial protection rise to the safety of workers from the hazards of commercial misfortune.

2. Overview of work place hazards

2.1Types of hazards

Diverse forms of hazards are Physical, Mechanical, Biological, Chemical, Psychological and Health hazards.[1]

2.1.1Physical hazards

physical hazards may additionally/by means of noise vibration, fireplace, humidity, temperature, strain, lighting, cold pressure(hypothermia), strength, warmth stress (hyperthermia), oxygen deficiency, dehydration (because of sweating), non-ionizing radiation (Ultraviolet, visible, Infrared radiation).[1]

2.1.2Mechanical hazards: Mechanical risks with the aid of form of agent: Impact pressure collisions, confined space, falls from height struck by means of items, falling on a pointed item, slips and trips, high-strain fluids (including cutting fluid), compressed air, entanglement. Equipment associated injury by sort of damage: Crushing and slicing, stabbing, shearing, puncture, friction and

abrasion, terrible maintenance/ housekeeping.[1]

2.1.3Biological hazards

Biological hazards may additionally/through dust, viruses, microorganism, protozoa, fungi, helminths, mould, blood borne pathogens, human tissues, cell culture, recombinant DNA molecules.[1]

2.1.4Chemical hazards

Chemical hazards may additionally/by using flammable/explosive materials, solids, liquid or gases, vapours, mists, fog or smog, smoke, sensitising retailers.[1]

2.1.5Psychosocial hazards

Psychosocial hazards may additionally/byway of place of work practices & systems, sort of work, risks involved in workplace, long working hours, payment systems, lack of recognition, poor remuneration, monotony, job dissatisfaction and lack of welfare activities tensions at domestic strikes unexplained reduction in manufacturing

2.1.6Health Hazards

A widespread of health hazard in the production of pharmaceuticals involves dirt and noise exposures, exposure to formaldehyde, repetitive movement issues and exposure to ultraviolet radiation.[1]

2.1.6.1Harm because of health hazards depends on

- Strength or efficiency of the agent.
- How long you are exposed to the agent.
- Quantity of the agent that is present.
- Exposed part of the body.[2]

2.1.6.2Various types of health outcomes are

- **Acute effect:** the effects make an appearance right away.
- **Chronic effect:** The effects make an appearanceafter an extended duration of manifestation and/or long after the manifestation finishing.
- **Local effect:** the body part will be affected when it is exposed.
- **Systemic effect:** the othercomponents or part of the body is disturbed by the entry of an agent.[2]

3. Pharmaceutical industrial hazards

The risks of harm rely upon the severity and likelihood of the hazard occurrence. Environment and environmental resources, dwelling organisms, people within the neighbourhood are exposed to the hazards. And also exposure to the toxic gases or chemicals and emissions in the manufacturing plants could lead hazards to the workers. In turn hazards leads to 'Disaster', it may be misshapen, grave occurrence in any place, springing up from natural or artificial causes, or negligence which effects in huge loss of life or human, wrecking of buildings and lot more. Pharmaceutical industrial hazards are assorted as:

- **Eco toxic hazard**: environment and environmental resources are affected
- **Persistent hazard**: hazards which retain for longer duration of time
- **Carcinogenic hazard**: aid to cancer occurrence
- **Disastrous hazard**: caused by misshapen, accident, grave occurrence in any place, negligence[3]

4. Sources of Hazards in Pharmaceutical Industry

There are diverse sources of risk or hazards in Pharmaceutical industry, which are**:** Production and Formulation installations, Warehouse monitoring involves hazardous chemical handling and storage, fuel filling station, landfilling of wastes, release of pollutants into the environment, effluents which are non-biodegradable and toxic to nature, untreated effluents which are dumped into running streams or water bodies could lead to potential risks.[3]

5. Common hazards at workplace

- Slips, Trips and Working at Heights
- Electrical and wires
- Exposed moving machinery/objects
- Fire and Explosions
- Chair and Desk Arrangement
- Violence
- Confined Spaces
- Trucks, Other vehicles, Forklifts and Transportation-Related Accidents[3]

6. What is a Safety and Health Management System?

A safety and health management system is proactive, collaborative process to find and fixworkplace hazards before workers are injured or become ill and also decrease workplace issues and accidents[6]. It should

include,

- company norms and policy for the protection and health management systems[4]
- necessary course of action for the possible misfortune and its prevention
- the linecontrol obligations
- more effective hazard specific programs

The system need to cowl the complete gambit of an organization's occupational safety and health aspects. The important elements of a successful protection and health management programs are:[4]Figure 1.

6.1 Policy and commitment

Occupational safety and health of every single worker must be involved in this system. Policy programme need to be conducted by safety and health management system as part of the successful preparation in workplace. For an effective safety and health management, organizations need to follow section 20 safety law statements. For a continuous enhancement of organization, they sponsor to various business execution as part of a demonstrable commitment. Environment of work place should comply with manner and letter of law and responsibilities of people. To decrease financial losses and obligations increase in manpower and conserving physical aid is an easy format and cost effective. In a wider context stake holder's expectation whether they are workers, or their presentative consumers or partners are high.[5]

6.2 Planning

The workplace need to broaden a specific plan to achieve its protection and health policy as supposed within the protection assertion.To bring out policies a virtual organization and management hierarchy along with good administration should be put into practice. Managers and employees must be informed about safety, health objectives and targets.[5]

6.3 Implementation and operation

Workers and staff should be motivated regarding their safety in working area and empowering them about their protection may avoid accidents and also to increase their abilities. This helps in virtual implementation and also an operation in safer and healthier way.

- To become a successful organization virtual participation and staff implication with accomplishment is important.
- Promotion of competence and effective communication by safety committee allows employees and their representatives to be responsible about health and their safety.

The main goal of system is risk reduction. For reduction of hazards and risk minimization, few grails are considered alsoto determine priorities and to assess risk certain techniques should be used. Risk should be minimized when they cannot be eliminated by using advanced devices and techniques for safer working.Measuring an achievement is always necessary and this is done by establishing performance standard. Identifying a particular act to advertise a benefits and value of safety and health, and to discuss about common thoughts regarding perception, quality profit on health and safety.The ocular and active governance of senior executive forward a superlations onsafety and health culture.[5]

6.4 Measuring performance

Estimating or measuring the performance of safety and health need to be carried out by organization. Performance must be evaluated and measured when improvement is needed and compared against agreed standards. Vitality of this management system is revealed by active self- monitoring which includes both hardware and software.If command fails, should figure out the cause for the failure through reactive monitoring by exploring the consequences, bad health or worse events. Active and Reactive monitoring has objective such as

- to ascertain instant cause of defective act
- to figure out cause and its flawless connection for the process design and

procedure of safety and health management system[5]

6.5 Auditing and reviewing performance

Overall safety and health performance improves constantly by examining and inspecting performance and organization should also inspect and improve its efficacy in management spontaneously. On the basis of monitoring and separate examination of intact management system, systematic review should be performed. These form the basis of involvement with an organization responsibility under 2005 act. To an intermittent improvement strong commitment imply the process of risk reduction and development of policy systems are must. Performances assessment done by: Inly relation to Key Performance Indicator (KPI: A financial or non-financial metric used to help an organization define and measure progress towards its goal) Comparing status of business with external business competitors and it's a constructive practice among employment sectors. Nowadays companies are reporting their authentic performance on worker safety and health as well as responsibilities regard to design and implementing safety statements in their annual reports. In addition, as of Section 80 of 2005 Act on 'Liability of Directors and Officers of Undertaking' employers have to prove that they are pro-actively managing the safety and health of their workers which aid them to be continued in their position. Also 'Auditing and Reviewing performance' data helps in these purposes. [5]

Figure 1: Elements of safety and health management system

7. Why is it important to have an effective safety andHealth management system?

Workplace safety is a proper of each and every worker within the workplace and all the employees need to work in a safe and comfy atmosphere.Health and protection is the keystone for all the industries a good way to raise the wellbeing of both employees and employers. It is a dedication and moral duty of the organisation to shield worker's protection.[4] Each and every person must return home in the evening with good health as such when they leave home for work in the morning. Have you ever imagined that the one you love will in no way be returning home? Otherwise you get a call that he/she is within the health facility due to a few incident befallen? These minds only get us goose bumps. This is the most effective cause for creating secure working environment.[4] Straightaway, workplace protection and health approaches are mainfor the prosperity of each personnel and employers because human loss is unbounded and unbearable. As, such prevalencecan bought up vital loss to the households.[4] Every management should pledge their time to contemplate and accomplish safety defence which are required in the work place to safeguard their workers at all time assurance. Also, employees should feel comfort with their daily work and it is the responsibility of management. So, that it aids management to take decisions favour to the employee's well-being. This helps them in many ways mainly, upgrading the productiveness and quality of the products.[4] The Occupational Safety and Health Administration/guidelines (OSHA) have noteworthy economic, regulatoryaswell as ethical and moralreasons to bring down work-related accidents and ill-health. This guideline protects employees and their Assets, Family as well as Staff from Harm. [7]Figure 2.

7.1 Economic Reasons

Business effectiveness is encouraged by the effective safety and health management systems rather than cost reduction.

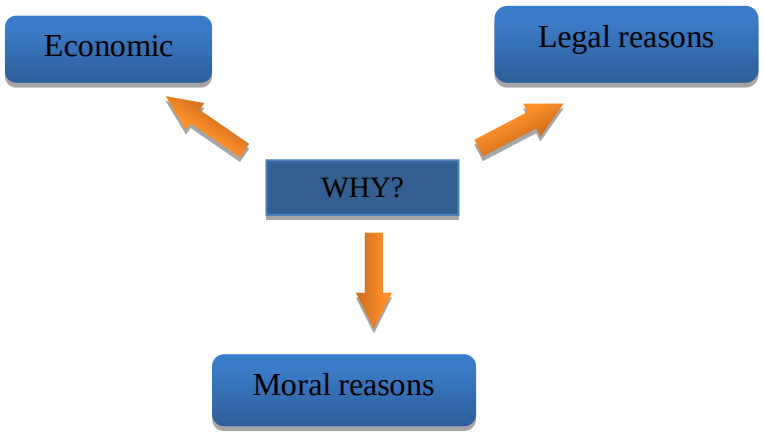

Figure 2: Reasons for effective safety and Health management system

Figure 3: Control measures for hazards

If any work-associated injuries occur, greater than three work days off are given an account to Health and Safety Authority each year. Work loss crop up to excess of million days every year to an account. This is due to difficulty in measuring long recess period of work associated diseases and illness. Injuries and unwell-health cases are because of disasters and deficiencies inside the occupational safety and fitness managementsystems. [5]

7.2 Legal Reasons

The Occupational Safety, Health and Welfare of workers are protected by effective laws (Work Act 2005) which are related to compensatory, punitive and preventive effects.[7]Systematic way of approach for proactive managing the safety, health and welfare responsibilities is very much needed. This guidance also advice organisations to upgrade their safety and health programs furthermore how protection and health to be managed. It also enables within the system to conform with their legal necessities.[5]

7.3 Moral and Ethical Reasons

The workplace accidents, injuries and ill-health will be prevented by proactive management of organisation. The workers must be protected from any kind of harm and which is a moral right. The loss of personal caused because of failure safety and health management system and OSHA guidance can fix those failures.[5]

8. What is a Risk Assessment?

A risk assessment is a systematic process of evaluating potential risks which are interrupted in planned activity or imminent activity and ongoing activity. Also includes estimation number of individual exposed with extent of exposure. Overall risk is calculated using various formulae and

risks are categorise to high, medium and low based on calculations. [8]

8.1 How to do a Risk Assessment?

Every employer or self-employed who are having command over workplace has to identify hazards eventually and assess the risk involved in it as of Work Act 2005 under Section 19 of the Safety, Health and Welfare. Risk assessment process should be smooth and simple. In some small organisations risk of hazards are low and it can be resolved by undertaking simple changes or control measures.Systematic assessment of risk involves three basic steps:

- Identify the hazards.
- Assessment of risks.
- Risk mitigation planning and implementation.

The safety statement should bear mainspring of the risk assessment process. Employer should interact with employees and consult with safety representatives while risk assessment process. Detailed risk assessment process or steps are as follows: [9]

Step 1: Identify the hazards

Risk identification is the crucial and prime step in risk assessment.A hazard can cause probable injury or ill health at workplace and also flash negative impacts on performance or progress of planned events and its goals. Some hazards are prominent such as improperly guarded moving machinery, working at heights, poisonous fumes, electricity, and movement of heavy loaded vehicle. Less prominently hazards are triggered by untidy workplaces and its maintenance. Exposure to certain chemicals or longer exposure to noise may cause severe hazards but it takes time to revel ill health conditions may be months or even years.

There are numerous types of hazard assessment which includes program risk assessment, risk assessment of operational flow, risk assessment of cost uncertainty, analysis of alternatives. For authentic program, identification of risk unites the team to resolve the risk successfully.[9]

Step 2: Assessment of risks

Hazards can create risks which are harmful to someone and severity may increase. Number of individuals who are exposed to hazard directly influences the risk. Estimation of risk assessment should include:

- probable cause of harm by the hazards
- probable severity of harm, and
- Number of workers exposed in frequent time.

Risk assessment methods should comply with legal requirements. Categorizing the risk to low, medium and high is the simplest method of risk assessment.

Low risk: The level of probability of an accident is low and negligible severity can observed. For example, unorganised workstation of computer, where body posture is not maintained may result in harm to the worker.

Medium risk: The level of probability of an accident and its severity increased so prominent control programs are required to bring down hazards to low risk. For example,manual handling of heavy loads without proper skills, where worker will be harmed physically and should use mechanical supports.

High risk: The level of probability of an accident is very high and severity may take events to some other extent. High risk hazards should be resolved early, before causing serious injuries, ill health or death.For example, operating vehicles in traffic zones, where other small vehicles or pedestrians will be harmed. Operator should hold control over vehicle in traffic zones. Apart from direct employee's cleaners, visitors, outside contract employees, workplace maintenance personnel may also come in contact with exposed hazards. So when assessing the risk these probable incidences should be considered.[9]

Step 3: Risk mitigation planning and Implementation

Employers should confirm the employees with practicable process to minimise the risk

of hazard. Not every workplace is risk free. Plan of action should be relevant to emerged hazards which include control measures and process monitoring. All these things assure minimized risk of injury.

When deciding or planning for control measures employers should make sure that:

- Every hazard should resolved successfully
- Changed way of approach to work is safe
- If not, what safety programs are undertaken to eliminate risk?

Workplace hazard should be eliminated at very first systematic risk assessment approach. If the approach is successful then employees are at safe workplace, if not recheck or re-design the risk assessment program for the sake of employees and it is necessary.[9]

9. Control measures

Control measures bring down greater exposer to the hazard, or it could eliminate hazard, or it can lessen the hazard of the danger of the exposure to that risk being realised. An easy manipulation will be the relaxed guarding of moving components of equipment eliminating the contact with it. Hierarchy of control measures are considered for effective reduction of hazards.[10]Figure 3.

9.1 Hazard elimination

Removal of the danger isn't continually doable though it does absolutely dispose of the risk and thereby gets rid of the hazard of publicity. An instance of this will be that fire station attendants are covered with the face mask to avoid threat of respiratory collapse while active in fire accidents.[10]

9.2 Replacement of hazard with lesser risk

Substituting or replacing the hazard won't eliminate all of the risks related to the system or pastime and can introduce one of a kind risk however the average damage or ill health consequences could be lessened. In laboratory studies, toluene is now regularly used as a substitute for benzene. The solvent chemistry of the two are comparable however toluene is much less poisonous and isn't always labelled as a carcinogen even though toluene can motive extreme neurological damage.[10]

9.3 Isolate the hazard

Isolating the hazard is accomplishedby proscribing get entryto plant and device or within the case of materials locking them away under strict controls. While using certain chemical substances then a fume cabinet can isolate the threat from the individual, similarly placing noisy system in a non-on hand enclosure or room isolates the hazard from the individuals.[10]

9.4 Engineering controls

The hazard can be removed from the person or creating barrier between the person and the hazard is established by redesigning the effective engineering controls, consisting of equipment guarding, extraction systems and proximity guarding or removing the operator to a remote region far from the threat.[10]

9.5 Administrative controls

Administrative controls encompass follow up of standard operating procedures, workplace safety practices, imparting appropriate training, instruction or information to reduce the capability for harm and adverse ill health to individuals. Permit to work techniques and quarantine are examples of administrative controls.[10]

9.6 Personal protective equipment

The term Personal Protective Equipment (or PPE) refers collectively to equipment such as safety glasses, goggles, aprons, lab coats, defensive shoes, respiratory shielding system, ear defenders and similar equipment used to protect the person during their work.PPE is typically seen as the last line of defence and is normally used alongside one or greater of the opposite manipulate measures. An instance of the weak point of this manage degree is that it is widely acknowledged that single-use dirt mask can't continually reap and hold an effectiveness.[10]

10. Case studies

Case 1: Scenario: In a coal generated thermal energy plant, a wall to wall smoggy shadow of coal dust bothered an employee for inhaling the "black dust" every dayand bought up the same to medical specialistto know subsequent health complications.The medical specialist guaranteed him that the smoke was very innocuous and would be flushed out of the body with sweat and urine in spite of worker's suspicion to severe damage of alveoli because of ceaseless inhalation of fine black dust with ample evidence.[11]

Deviation

- Unscientific installation/absence of exhaust fans at coal burning area.
- The medical specialist obsoletely against "medical ethics" and also violated occupational health safety ethics by improper communication with worker.

CAPA

- First and for most exhaust fans must be installed scientifically to avoid forming dense cloud of black dust inside the coal burning room.
- The medical specialist should provide knowledge to worker regarding health risks for prevention of disease and also it awakes worker to cope with treatments.
- The medical specialist should be penalized for his action, not to commit immoral again as per occupational health safety act.

Case 2: Scenario

A female worker uncovered to the exceptional dirt of polyacrylate, rushed to medical specialist and laid low with respiration troubles. He allude her to government radiologist's to execute X-ray and verdict had drawn to tuberculosis without considering occupational history in spite of X-ray results didn't counterpart analysis of tuberculosis, still anti tuberculosis treatment proceeded and she died after couple of months.[11]

Deviation

- Undoubtedly its action of maliciousness following deficit proficiency of medical specialist, which is disobedience of "medical ethics".

CAPA

- The medical specialist's licence should be withdrawn till the end of legal proceedings and penalized for his action, not to commit immoral again as per occupational health safety act.

CONCLUSION:

Workplace hazards are serious issue that endanger employee welfare and they should be super scribed by safety measures. Determining workplacehazards permits organisations to shield theirworking stiff from misfortune. Safety in simple terms means freedom from the occurrence of risk or injury or loss.

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