
EXPERIMENT 15 STUDY OF DIFFERENT SAFETY MEASURES TO BE ADOPTED IN A DAIRY PLANT

Structure

- 15.1 Introduction
- 15.2 Objectives
- 15.3 Experiment
 - Principle
 - Requirements
 - Procedure
 - Description of tools
 - Observations
 - Results
- 15.4 Precautions

15.1 INTRODUCTION

The industrial safety is basically a broad term covering a wide range of general purpose and special purpose of safety measures to be adopted in the operation, repair and maintenance of various dairy equipments. As we know, with the advancement in the operation of sophisticated dairy equipment, there is a drastic enhancement in the quality and quantity of dairy products. On the other hand, the threat to the human life also increased due to the ill implementation of safety norms. The first aid measures should be well known to all the workers of the dairy and a first aid kit should be placed at easy approachable place with + (**Positive**) sign on the box.

If safety norms are strictly adopted the chances of accidents occurrence are reduced and hence the threat to the man, machine, material could be avoided. This result in increase in production and hence overall cost of the product will be reduced. Secondly, there is saving in man-hours, loss of human life and property of the industry. So, each and every person responsible for the operation, repair and maintenance of dairy equipment directly or indirectly, should be well versed with different safety measures to be adopted. The endeavor should be, to make them safety conscious so that it becomes a part and parcel of their regular working. The following are the safety measures, which should be adopted strictly.

1. Safety measures against material handling accidents.
2. Safety measures against electric shock accidents.
3. Safety measures against fire accidents.

15.2 OBJECTIVES

We will be able to

- know the importance of various safety measures to be adopted in a dairy industry.

- protect the worker against accidents and ensure safe and better working atmosphere for them.
- know the operation and routine maintenance of fire fighting equipment.

15.3 EXPERIMENT

i. Principle

The principle of different safety measures to be adopted in any industry should be human friendly. Priority should be given to save human life as compared to other losses; because the property loss can be compensated where as human loss can never be compensated. So all the safety measures should be implemented carefully.

ii. Procedure

A) Safety measures in material handling accidents:

With the advancement in technologies, the conveyors or lifts etc. are to be used for transporting the material from one place to another. But some time we have to handle the material manually if there is any problem in the transportation system. In both the circumstances, the chances of accidents are there, if proper safety measures are not adopted in true spirit. So the following points should be kept in mind while handling the material.

- i) The path should not be slippery.
- ii) The worker should wear a proper and tight dress while on duty.
- iii) Proper protective clothing like, gumboot, leather hand gloves, helmets and goggles etc. should be wore by the workers.
- iv) While handling the material, the hand and gloves should be free from the oil and grease etc.
- v) Worker should be properly trained and have habit to work safely.
- vi) Riding on conveyor should be strictly prohibited and standing instructions to this effect may be displayed at proper place.
- vii) The worker should be trained to handle the material manually as well as by conveyor or other suitable means.
- viii) Before handling the material it should be properly inspected for pinches and shear point if otherwise it may injures to the worker handling it.
- ix) The worker should be aware about the moving parts of machines while handling the material. The moving parts should be properly covered with a cage guard.
- x) The material, which have slipper, surface such as oily or greasy ones, should be wiped off before handling.

B) Safety measures against electric shock accidents:

Accidents through electric shock are more than the accidents of any other kind. Because when the mechanical injury occurs to worker, we can see and can prevent if we are little bit cautious where as the electric shock accidents occurs at once. Secondly, the intensity of electric shock is of great concerned because the muscular system of the respiratory system gets paralyses by contracting the respiratory system, which may lead to the death of the electric shock victim. The intensity of electric shock depends upon the effective voltage, body resistance of the victim and supply frequency. Higher the effective voltage and frequency, greater the intensity of electric shock i.e. more chances of fatal accidents. The following are

the point, which should be kept in mind and to be adopted by the worker for safe working.

- i) Only authorized and trained persons who are well versed with the electrical circuit diagram should be allowed to work with electrical system.
- ii) All the persons should wear proper and tight dress along with other protective items such as leather hand gloves, helmet, gumboot and safety belt etc. while discharging their duties.
- iii) All the electrician tools such as combination pliers, screwdrivers, meggar, earth tester, clip-on meter and millimeter etc. should be insulated properly.
- iv) Unauthorized person should never be allowed to temper with control panel, cable, wires and equipments etc.
- v) All the broken accessories should be replaced promptly such as switches, sockets, fuses holders and fan regulators etc. otherwise it may be the cause of electric shock.
- vi) An authorized person should replace fuses and miniature circuit breakers with proper rating.
- vii) Screwdriver and combination pliers should never be used as hammer and these should have proper insulation.
- viii) Inflammable material should never be kept near the control panels and metering system where the chances of fire are more.
- ix) Danger plate or signboard with proper indications and instruction should be displayed on the machine or on the wall near the machine and metering section.
- x) Always work with proper permission. Switch off the supply and a notice to this effect should be hanged on the I.C.T.P main switch or circuit breaker that **“Do not operate, men at work”**.
- xi) All the persons associated with electric work should put on proper and tight dress and shoes have rubber soles.
- xii) All the portable appliances, electric tools etc. should be checked proper for earth resistance at regular intervals.
- xiii) Periodic inspection charts should be prepared and displayed in regional and English language to detect the damaged wires, main switch blades, earth wires and leakage currents etc.
- xiv) As far as possible the wiring should be underground.
- xv) The test lamp should consist of two lamps connected in series of same watt and operating voltage.
- xvi) While carrying out electrical repair of electric heater, kettle, fan, geyser etc. these should be earthed properly.

C) Safety measures against fire accidents:

The following safety measures should be adopted for providing safe and tension free working atmospheres to the worker, by preventing the chances of fire accidents.

- i. All the doors and windows should be open outward, so that in case of fire, the people may exit with few seconds to avoid human loss along with loss of property.
- ii. Fire fighting equipments should be kept at a safe and convenient place, easily accessible to all.

- iii. Effective alarming system should be installed and checked for its effective working at regular intervals.
- iv. Bucket filled with sand and water should be placed in the corridor or any other convenient place near the possible accidents place if space requirement permits.
- v. Never use water to extinguish the electric fire. Sand can be thrown on the electric fire. Carbon dioxide may be used for fighting such electric fire.
- vi. Every person employed in the industry should be trained to fight with fire accidents and they should be aware of the location of fire fighting equipment.
- vii. All the inflammable and explosive material should be stored in a cool and dry place at a distant place. The inflammable liquid such as petrol, diesel and kerosene oil may be kept in a closed container.
- viii. Any kind of material should not be allowed to store on the way to exit.
- ix. Smoking, open fire and sparks etc. should be strictly prohibited near the inflammable material and a signboard to this effect should be displayed.

iii. Observations

The following are observations, which should be taken carefully.

- i. Observe the location of all fire fighting equipments in the industry.
- ii. Whether the fire alarming systems are in proper working condition or not.
- iii. Sand and water buckets are filled with sand and water respectively.
- iv. All the electrician tools are properly insulated. The insulation may damage due to improper handling or worn out due to aging. It should be replaced immediately.
- v. Observe the location of first aid kit and ensure that the medicines should be sufficient and there should be updated at regular interval.
- vi. The worker should observe the location of various tools and the various methods of upkeep.

iv. Results and discussions

The workers and other people of the industry will understand the importance of different safety measures. How we can save the man material and other property loss of the industry? Apart from the above, importance of first aid kit and first aid in case of accidents. The workers also understand the various safety measures and how it may be implemented.

15.4 PRECAUTIONS

In addition the following precautions should be taken carefully while working in the dairy industry.

- i) The intensity of light should be within comfortable zone according to the requirement of job. It should not be too low that the operator may feel stress on eye and it should not be too high that the operator may face glare.
- ii) The work place should have natural air circulation and if possible the provision of natural light should be ensured.
- iii) If any accident occurs, the first aid should be given to the victim without any delay according to condition of the patient and in the mean time either we should call the doctor or rush the patient to the near by hospital.
- iv) In case of fire accidents, before starting extinguishing the fire, ensure what type

of fire it is. If any electric wire, cable, control panel and motor etc is in contact with the fire, the water should not be used to extinguish the fire. Sand or carbon dioxide cylinders should be used.

- v) In case of fire, the fire-fighting department should be informed and asked for help.
- vi) Avoid further spreading of fire by isolating the nearby inflammable material or by any other means.
- vii) The eyes should be protected from the flying particles such as carbon particles in the smoke.
- viii) No person should be asked to lift or carry any material excess to his capacity, which may lead to serious injury.
- ix) Untrained persons should not be allowed to work on hazardous jobs.
- x) The working tools should be handled carefully. Loose handling of tool may lead to serious accidents.