A Study on Hazmat Storage and Handling Protocol in Multispeciality Hospital

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Abstract - The purpose of this study is to reduce the risk and evaluate hazards associated with the storage and handling of materials. Hazardous materials are commodities that pose a threat to the environment and are explosive, oxidizing, and corrosive. Therefore, hazardous goods must be stored correctly with an identification mark, handled carefully, and locked. This study is to determine the practices of all hazardous materials to be stored properly, containers should be properly labeled, read labels and the materials safety data sheet before using any material to make sure to understand hazardous, precautions and the use of PPE(Personal protective equipment) while handling the hazardous materials. The result of the study is to achieve 100% compliance on hazmat in the hospital.

***Key Words*:** Hazmat, explosive, PPE, storage& handling.

1. INTRODUCTION

Any compounds that could endanger human health, damage property, or risk human life are referred to as hazardous materials (hazmat). A lot of hazardous (hazmat) compounds have no flavour or odor. Physiological symptoms like nausea or wet eyes make some of them noticeable. Certain dangerous substances, which are present beneath the surface of the ground, resemble oil or foam. By using labels, and signs, the item may be identified.

Corrosive hazmat substances that are strong enough to chew through steel drums or human skin are examples of hazardous compounds. Due to their ability to eat through the containers they are transported in, they pose a serious threat during transit.

1.1 DEFINITION

Hazardous compounds that can catch fire are combustible at relatively low temperatures. There is a chance of explosion, toxic gas discharge into the atmosphere, and the spread of fire and smoke as a result. Chemical paint removers are a few examples. Benzene Reactive substances can explode or emit dangerous compounds when exposed to heat or pressure or when they mix with water. Examples include stannic chloride, sodium metal, and munitions and weapons that have seen better days. Radioactive materials are substances that can have negative side effects that linger for thousands of years and are both highly and lowly radioactive. Research centers and nuclear power plants produce the majority of these materials. Toxic hazardous materials are made up of harmful substances. When exposed to these substances, both humans and animals risk developing major health problems.

1.2. HAZMAT STORAGE

Hazmat storage guidelines have to be followed as below:

1. A cabinet containing hazardous materials must be labelled and kept locked.
2. Store corrosive materials on the lowest shelves.
3. The hazardous supply in the user department should be stored there for no longer than a week.
4. Strong oxidising acids like sulfuric, nitric, and others should not be kept next to organic acid when it is being stored.
5. Hazardous liquids must be stored at arm's length or lower.

1.3. HAZMAT LABELING

Hazmat labelling guidelines have to be followed as below:

1. Label the stickers in the hazardous items with the date that they were first opened by the end user.
2. Indicate the hazardous items' preparation and expiration dates on the label.
3. The hazmat product must have warnings about respiratory sensitization, a possible cancer risk, and eye harm.

1.4. HAZMAT HANDLING

Hazmat handling guidelines have to be followed as below:

1. A worker should put on protective clothing while handling hazardous.
2. After handling hazardous materials, wash your hands.
3. When transporting hazardous materials, put on gloves and shoes.
4. Put on medical gloves when handling radioactive material.
5. Wear the appropriate PPE when handling hazardous.

1.5 OBJECTIVES OF STUDY

- To study the Hazmat storage and handling protocol.
- To analyze the lagging issues of hazmat storage in the hospital.
- To suggest improvisational measures to handle the hazmat as per the protocol.

2.1 LITERATURE REVIEW

1. According to Yong Chang[1], et al, 2022, In the fire explosion events in the port's hazardous chemical storage areas, management factors were the primary and direct causes, equipment and facility factors were the secondary causes and human factors were the primary and indirect causes. A prevention and control strategy for fire explosion accidents in places where hazardous chemicals are stored is suggested based on evaluation results, and it serves as a useful guide for the relevant management departments

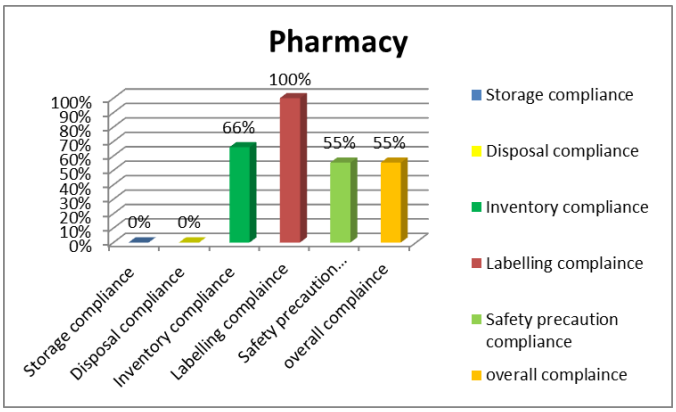
2. According to Ruwayd Tawfeeq Alhasad[2], 2018, Identifying industrial risk enables employers to safeguard their workplace from mishaps, injuries, and fatalities. In the pharmaceutical industry, an industrial hazard is the threat or possibility of an accident injuring a person while performing his regular duties in the facility.

2.2 METHODOLOGY

This study took place in each department in the selected hospital from January 2023- March 2023. The simple random sampling technique and primary data are used in order to collect data. 35 departments with 18 parameters were collected by an observational method using a checklist. Percentage analysis and statistical analysis have been recognized for this purpose.

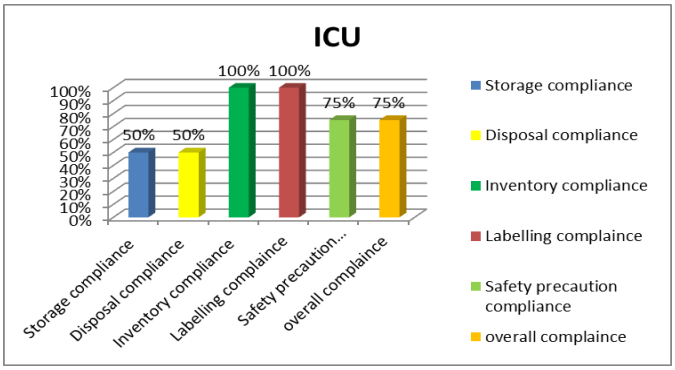
2.3 ANALYSIS

Chart 2.3.1. Showing the average compliances of hazmat storage, handling and inventory in the pharmacy department.



The above chart 2.3.1. Shows that the overall compliance of hazmat storage and handling in pharmacy is 55% in which labeling is 100%, inventory is 66%, safety precautionary measures are 55% and storage & disposal are 0%.

Chart- 2.3.2. Showing the average compliances of hazmat storage, handling and inventory in the ICU.



This above chart- 2.3.2. shows that the overall compliances of hazmat storage and handling in ICU is 75% in which inventory and labeling is 100%, safety precautions are 75% and storage & disposal is 50%.

2.4.MAJOR FINDINGS AND RECOMMENDATIONS:

1. 97% of MSDS (Material Safety Data sheet) file was not updated.
2. 80% of hazmat cabinets are not kept locked all the time in the departments.
3. 82% of Emergency eye showers were not present as applicable.
4. 34% of hazardous material has not been placed in a designated location.
5. 12% of designated storage location has no appropriate hazmat warning sign.
6. 10% of the Quantity was not matched the pre-defined stock quantity in the MSDS (Material safety data sheet).

The recommendations includes,

1. Hazmat cupboard has to be retained latched at all times to prevent the incident.
2. Hazmat cautioning indication should be inducted in the Hazmat storage areas to avoid any incident.
3. MSDS (Material safety data sheet) should be updated once in every 6 months if there is any changes in the policy.
4. Keep the hazardous material to be stored in the designated location.

3. CONCLUSIONS

The hazardous materials are explosive, oxidizing, and flammable in nature so it has to be kept in a separate cabinet and it has to be locked all the time. The study is to keep an eye on the hazardous storage and handling procedure and to offer better prevention methods for workplace dangers. The goal of this study is to reduce the risk to health by appropriate labeling and storing & handling the hazmat properly as per the hospital policy. The main goal of this study is way to prevent accident and achieves 100% compliance with hospital hazmat policy. Also, in order to reduce occupational injuries, this study can assist management in focusing on enhancing workplace safety.

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