

Analysis and Strengthen Process for Safety of Hazardous Chemicals used in Hospital

Project by

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Hazardous Materials in Hospital

- Hazardous materials are any item or agent (biological, chemical, or radiological), which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.





JCI and HazMat

HazMat is one of the element under Facility Management and Safety (FMS) chapter of JCI.

FMS is necessary to provide a safe and secure environment to both patients and staff through managing risk across the Hospital.

Management of Hazardous Materials

- Hazardous materials can be managed with proper planning from the procurement to the final utilization.
- The purpose of this project is-
 - to describe the proper use, handling and storage practices and procedures; to be followed by people working with hazardous materials; anywhere in the hospital, and
 - to assist in protecting them from potential health and physical hazards.

Objective of Study

- To assess the hospital's existing setup and procedures of management of hazardous materials as per JCI norms.
- To understand the major non-compliance.
- To establish action plan to overcome the gaps based on analysis.

Methodology

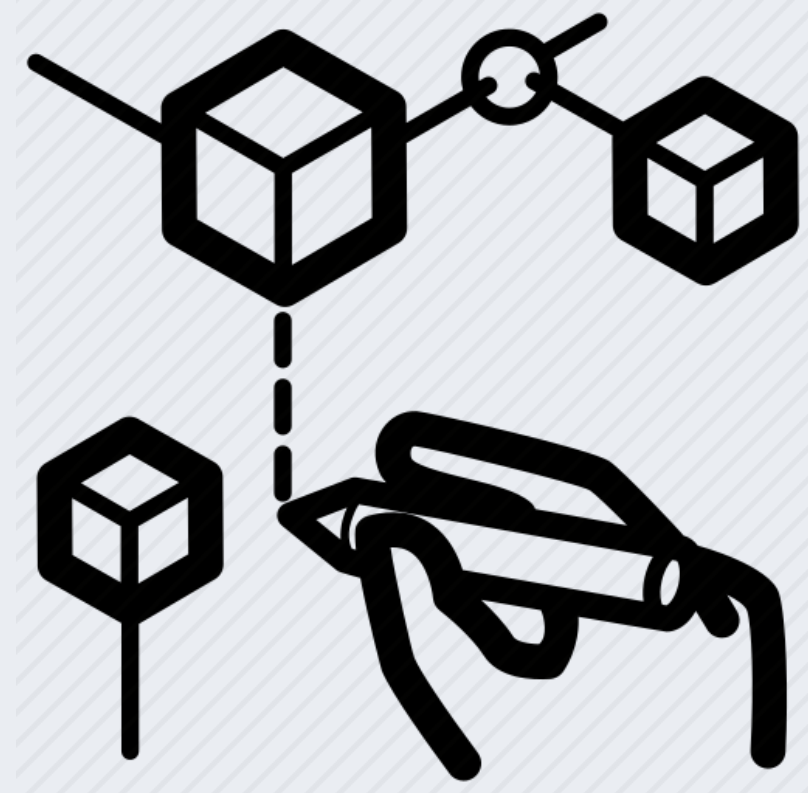
- The study will be observational evidence based in nature. The study will be based on observations made. It will be done broadly in two parts-
- Analysis of present condition in the departments.
- Comparison and compliance with the JCI standards.

Data Collection

- Discussion with Head of the Departments, managers, and other responsible staff.
- Listing and segregation of all the chemicals available in hospital.
- Observation of the information gathered.
- Using other available information, as per requirement.
- JCI toolkit.

Analysis Framework

- Listing
- Segregation
- MSDS Management
- Stickers Management
- Training
- Evaluation



1. Listing and Segregation of Chemicals

- List was made including all the chemicals which are being used in the hospital.
- All the materials involved were then set apart based on the area in which they were being used.
- These areas includes Laboratory, IPD Pharmacy, Stores, Engineering Department, Blood Bank, Housekeeping and Nursing.
- Timely updation of chemicals or hazardous materials was made at every step to avoid any divergencies.

2. MSDS Management

- An MSDS or Material Safety Data Sheet is a document that details information about chemicals; and along with the outer label; is a good source of information for chemical safety.
- MSDS Sheet supplied by the manufacturer contains data of every aspect. This data was then converted into the format which is being used in the hospital.

MSDS Management

- It consists of 5 sections and covers all the information which is required. These sections are:
- - Chemical Product and Company Identification
- - Physical and Fire Hazard Data
- - First Aid Measure
- - Accidental Release Measure and Personal Protection
- - Handling and Storage

 ETERNAL HOSPITAL	MATERIAL SAFETY DATA SHEET
Effective Date: 01 Apr 2018	Prepared By: Dr. Kalpana Bindal

CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Chemical Name:	Hazard Category	
Trade Name:	A- Red ☐	
Chemical's Ingredient name:	B-Yellow ☐	
Manufacturer's Name	C-Blue ☐	
Supplier's Name:	D-White ☐	

PHYSICAL AND FIRE HAZARD DATA

Appearance	Flammable
Odor	Flash Point
Solubility in Water	Auto ignition Temp
Vapor Pressure	Extinguishing Media
Chemical Nature	Explosion Hazards

FIRST AID MEASURE

Skin Contact
Eye Contact
Inhalation
Ingestion

ACCIDENTAL RELEASE MEASURE AND PERSONAL PROTECTION

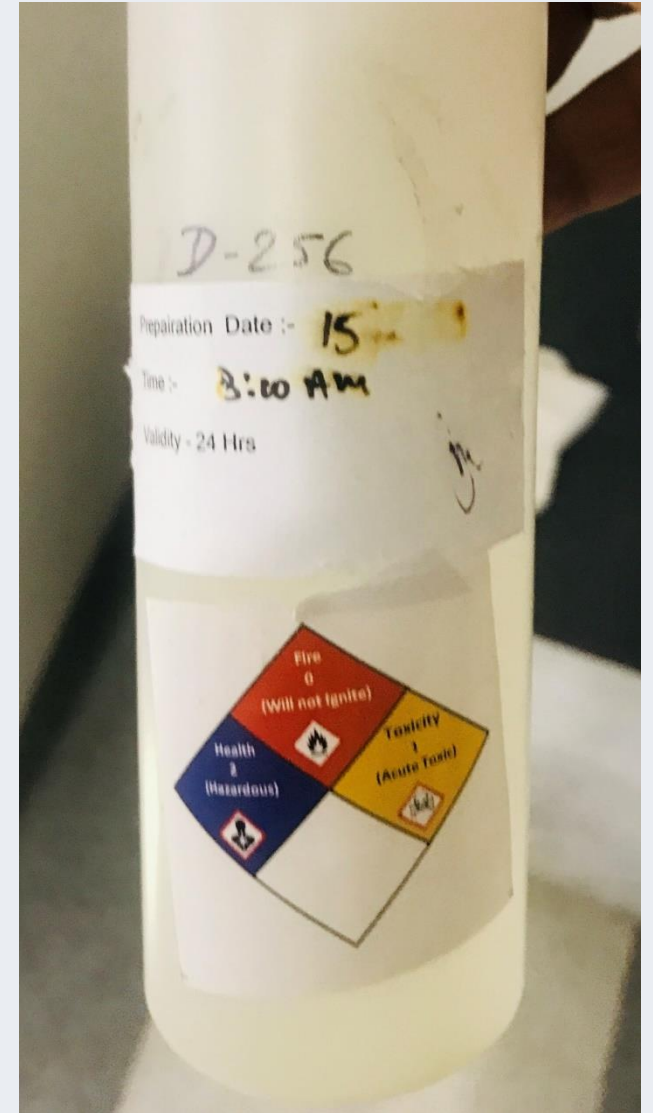
Spill Management Procedure	
Personal Protective Equipment	☒ Gloves ☐ Respirator ☒ Eye ☐ Footwear ☒ Clothing ☐ Other

HANDLING AND STORAGE

Handling Precautions	
Storage Requirements	☒ Fire Proof Container ☐ Exhaust Fan ☐ Air-conditioning
Regulatory Requirement	

3. Stickers Management or Labelling

- There are different stickers for different chemicals.
- These stickers needs to be pasted after successful procedure of Material Safety Data Sheet Customization.



Stickers Management or Labelling

- These stickers are usually called NFPA stickers. These stickers are four colored diamond shaped, which contains-
 - - Red indicates Flammability level
 - - Yellow indicates Toxicity level
 - - Blue indicates Health Hazard
 - - White indicates Special Hazard



4. Training of the Personnel

- Stickers or labels pasted on the chemical container or packaging should be there after procurement to the use at last point.
- This can be done by successful training of the in-charge of every involved department in this procedure.
- These trained in-charge will then train the staff of their respective departments.
- Sometimes lack of training may lead to any issues like losing stickers even when it wasn't reached at its last point of use. Such issues can be avoided if involved staff is well-trained.

5. Evaluation or Assessment

- Even after training, there could be chances of any mistakes till the use of the product at the bed-side level.
 - Ward level
 - Bed-side

HazMat Spill Management

- hazards generally come from spills of chemicals used in the hospital. Hazmat found in the hospital may include variety of chemicals as well as powders.
- Spillage of these materials is of two categories - emergencies and incidental releases.
- Responses to incidental releases of hazmat where the chemical can be neutralized, absorbed, or controlled at the very time of release by the staff in the very immediate release area, or by the maintenance people, all are considered under Incidental spills.
- In emergency, persons or environment gets exposed, and results in larger level of response.

HazMat Safety

- **Personal Protective Equipment (PPE)–**
- PPE usually refers to collective of chemical protective clothing like suits, latex gloves, eye protection & boots) along with the respiratory system protection.
- **Decontamination Equipment -**
- Removal of hazmat from staff and equipment to the standard level to prevent the happening of predictable or foreseeable adverse health results is termed as decontamination equipment. Requirement in hospital would be to sanitize patients who enters the hospital and even others.
- **Monitoring Equipment-**
- The level of dangerousness can be assessed with monitoring equipment, in event of an emergency, a person who is not able to wait to obtain the output from a lab, in this scenario, equipment should be easy to use.
- **Response/ Clean-up Equipment-**
- Response and clean-up equipment are the ones which are used to stop the leakage and chemical spill of product. It can be done through kits which are available in market. Kits may contain PPE.

Results

- We can say that there are many choices that need to be prepared by the hospital. Equipment response management, ongoing training, and implementing a respiratory system protection program are the main problems that has to be avoided. The facility capability to get involved in an acute response to a hazmat incident is mainly resolute by actions taken just before the event.

Conclusion

- From the analysis made in the study period, it has been observed that there were few chemicals which were not in used but still available in the hospital's hazmat records, while some newly added materials were not present in hazmat records. This problem was resolved along with the problem of availability of Material Safety Datasheet which must be there in every department but MSDS of few chemicals was not there. Same problem was encountered with labelling of the chemicals too. For this, labelling was ensured from scratch level to the last point of use.

Suggestions

- Materials should be checked immediately once it gets into the hospital.
- Training of in-charge should be done on urgent basis to update the staff with the handling and usage of hazardous materials.
- Concerned staff should be trained and be informed further for the same by in-charge.
- Proper coordination from ground level to top level should be present.
- There should not be any delay in handling the materials.

Thank You