

REPORT OF FIRE AND SAFETY AUDIT
CONDUCTED AT BOMBAY COLLEGE OF
PHARMACY ON

15, 16, 26, 29, 30 SEPTEMBER 2014

BY

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A. K. Kulkarni

PART 1: EXECUTIVE SUMMARY

For part1 and part 2 no summary required

For part 3: Physical Hazards

Positive areas:

- Material kept below staircase was cleared immediately
- Some part of terrace was seen clean
- Cable trays are made for electric wiring
- In microbiological in 019 fire extinguisher is kept at a conveniently removable height
- Good instructions about PPE are displayed at the entrance of room 221, 223
- In room no. 223, properties of hazardous chemicals are displayed.

Areas of Improvement:

- Reduction in fire load is required to be done by removing non – required item
- Japanese method of housekeeping i.e. 5-S should be used for housekeeping
- Newer equipment such as vacuum cleaner may be used for cleaning
- Dangling wires, unclean panel room, open main switches, access behind main panel, no rubber mats, clutter of wiring etc are the electrical problem. All problems need improvement
- Maintenance of earthing, checking its resistance is neglected, See that it is done.
- No. of combustible fire hazards are lying in every area of college, regular removal is a must.
- Maintenance of fire fighting arrangement should be done regularly. Depending on the hazards they must be readily available in every room.
- Wherever necessary explosion proof refrigerator may be used for chemical storage.
- Safety during working at height is neglected everywhere, including certain area of terrace.
- Bad qualities of hand tools are used by the contractors, stored very badly hence educate contractors.
- Lungis should not be allowed to wear in work area.
- Use suitable bird repellent to stop these birds entering in college premises
- In many structures trees are growing. They are harmful to the structure so remove and do not allow them to grow.
- Total emergency plan needs to be prepared
- Safe access should be provided to every work place.

- Safe access ladders are must.
- Make compulsory use of PPE to everyone. Staff members first.
- All aspects of safe chemical storage in laboratory must be implemented.
- Training on Safety in storage of items should be imparted to concerned person and implemented.
- Gas cylinder safety – teach concerned person and implement.
- Safety in canteen is totally neglected. See detailed report.
- Ventilation safety should be implemented
- Safety of all instruments should be ensured.
- Machine guarding is neglected. See that it is implemented.
- Avoid corrosion everywhere. It may create bad accident.
- Instruction regarding rooms 029, 03, 210 may be implemented.
- Do not neglect first aid.
- See the instructions regarding library.

For part 4: Safety management

- There should a separate safety department
- All concerned must be given safety training on various areas of safety suitable to college
- Immediately start accident/ fire reporting system
- Every such accident/ fire must be investigated without blaming anybody
- Regular safety Inspection is required
- Japanese 5 – S method of housekeeping should be taught and implemented
- Safety in storage, handling, use and disposal of chemical must be ensured
- On site emergency plan should be prepared, and mock drilled
- Safety in laboratory must be studied and implemented.

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FIRE AND SAFETY AUDIT CONDUCTED AT BOMBAY COLLEGE OF FARMACY ON 15, 16, 26, 29, 30 SEPTEMBER 2014

INDEX

Sr, No,	Subject	Page No.
	Acknowledgement	2
Part 1	Executive Summary	3
	Index	5
Part 2	General	7
2.1	Introduction	7
2.2	Objective	7
2.3	Methodology	7
2.4	Observations and Recommendations	7
Part 3	Physical Hazards	8
3.1	Fire load	8
3.2	Housekeeping	9
3.3	Electrical Hazards	16
3.4	Electrical Earthing	27
3.5	Combustible fire hazard	28
3.6	Fire Fighting	32
3.7	Fire Prevention	35
3.8	Safety at Height	36
3.9	Hand Tools and Powered Tools	38
3.10	Unsafe Dress	40
3.11	Bird Hazard	40
3.12	Structural Problems	41
3.13	Emergency Plan	41
3.14	Access	42
3.15	PPE	45
3.16	Storage of Chemicals	47
3.17	General Store	50
3.18	Gas Cylinder Safety	51
3.19	Canteen Safety	53
3.20	Ventilation	57
3.21	Instruments	57
3.22	Machine guarding	63
3.23	Corrosion	67
3.24	Room No. 031	68
3.25	Room No. 029	69
3.26	Room No. 210	69
3.27	First Aid Box	69
3.28	Library	70
Part 4	Safety Management	72
4.1	Safety department	72

4.2	Safety training	72
4.3	Accident/ fire incidence reporting	72
4.4	Safety Inspection	72
4.5	Housekeeping	73
4.6	Storage and handling of material	73
4.7	Emergency Plan	73
4.8	Safety in Laboratory	73
4.9	Fire protection	73

PART 2: GENERAL

2.1 Introduction

The management of Bombay College of Pharmacy, requested me to conduct Fire and Safety Audit in their college at . Accordingly the Fire and Safety Audit was conducted on 15,16,26,29, 30 September by me (A.K.Kulkarni)

2.2 Objective

The objectives of the fire and safety audit are as follows:

- a) Examine the existing fire and safety measures, procedures, system for controlling measures.
- b) Identify potential hazards which have caused or are likely to cause personal injury, property damage or loss of time.
- c) Recommend on the basis of identified hazards, changes (if any) to improve upon the existing system and procedure of work.

2.3 Methodology

The following methodology has been adopted to achieve the objectives.

- a) Actually visiting every room of college.
- b) Visiting every nook and corner of the college.
- c) Collecting all the existing fire load and safety deficiencies and positive safety areas
- d) Preparing report based on actual finding
- e) Presenting the same to the dignitaries in the college on a conveniently suitable day and presenting draft report.
- f) Getting suggestions. Based on the suggestions received prepare a final report and submit to the management.

2.4 Observations and recommendations

The Safety Audit was conducted by actual field visit to see the actual hazards at site in terms fire and safety of requirements and accordingly recommendations and / or suggestions wherever applicable are given against each finding.




Since the audit is based on sample inspection, recommendation given in a particular case will be the same for any uncovered area where similar situation exists.

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Part 3: Physical Hazard

No	OBSERVATIONS	RECOMMENDATIONS
3.1	Fire load	
	<p><u>Visible items</u> a)Combustible material</p> <ul style="list-style-type: none"> • Recorded book items - 14786 • Furniture items: wooden plastic etc. -5330 • Gas cylinders -39 • Burners – 243 <p>b)Electric load</p> <ul style="list-style-type: none"> • Electric items: lights, fans, etc -1396 <p>c)Computer, printers -150 d)Chemical equipment such as incubator etc – 548</p> <p><u>Chemical stalk in store</u> e)Flammable liquids in store – 47 nos. f)Toxics – 20 g)irritants – 10 h)oxidizing and reducing agents - 13 i)Corrosive – 33</p> <p><u>MKR LAB</u> j)Hazardous chemical lab – 119</p> <p><u>The following have not given their record of chemical stock with them</u> Room nos. 005, 006, 015, 019 - 1&2, 110, 110C, 110D, 110D, 110E, 111, 116, 116A, 117, 118, 119 PG Lab, 122 Toxicology, 209, 210, 211, 218, 221, 222, 223, RIA lab, Instrument room near 114, passage in front of toilet – 6cupboardful of chemicals – totally chemical stock from 27 areas.</p> <p><u>Entrance and Internal Road</u> 1) Entrance width – 4.10m 2) Road width near road – 3.95m 3) West side road – 2.40m 4) South side – 4.35m 5) East side – 3.26</p>	<p><u>Visible items</u> Wherever possible reduce</p> <p>Systematic storage is required and reduce wherever possible</p> <p>Prepare and give</p> <p>Everywhere 6m width is required.</p>

3.2	Housekeeping	
		
	<p>Racks are kept on staircase leading to library. They become stumbling hazard during emergency.</p>	<p>Staircases are not to be blocked any time. Not even for small time.</p>
		
	<p>Combustible material storage below the staircase</p>	<p>Action taken – It is removed.</p>
		
	<p>Unclean electrical room at first</p>	<p>Clean it. While cleaning electrical</p>

	floor.	shut down may be necessary. Wire man should go with cleaning persons.
		
	Bottle etc. kept on parapet wall. Not cleaned. It may become very bad hazard if it falls down.	Clean it. Do not allow such practices.
	 	
	Keeping anything above the cupboard is unsafe. It may fall down on someone's head.	Do not allow any material to keep above the cupboards

		
	Broken chairs lying in Gattafpsse lab	Dispose them off
	  	
	N no of items are lying in the garden near walkway behind the college.	Clean everyday.



Room for housekeeping persons –

- No lockers given for keeping clothes. They have hanged them near switch
- No place for keeping brooms and other cleaning equipment.




- Give separate lockers for keeping their clothes etc.
- Give separate place for keeping all cleaning equipment



Why such crude and old method for cleaning cob-webs?

Use of vacuum cleaner may be made.



	Broken dust bucket not changed	Change it.
		
	Housekeeping inside the cupboard is equally important. All things mixed together. No labelling.	Keep similar things together. Label them.
		
	Room no. 119A – material kept on cupboards.	Do not allow any material to keep above the cupboards
		
	Room 119D – stationary above the cupboard.	Do not allow any material to keep above the cupboards



Room 123 – housekeeping inside the cupboard is bad.

Housekeeping inside the cupboard is equally important.







Look at the material kept behind the cupboard in room no. 210



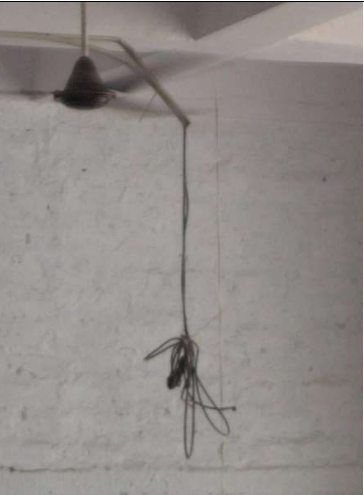
Remove. Do not allow to keep.









Unused machine in 019.




If not useful dispose it off.




		
	Unclean area below the water tank in terrace.	Clean the same.
		
<ul style="list-style-type: none"> <ul style="list-style-type: none"> What is this leakage in the wall? Is it harmful? Not cleaned. Crack is seen on wall. Whether deep? 	<ul style="list-style-type: none"> Find out what is the leakage. Clean it. Get it repaired 	
		
	All this is lying on terrace	Remove it.
		
	This part of terrace is clean	Good





		
	These unnecessary parts are lying on terrace	Remove them
3.3	Electrical Hazards	
		
	Good	but clean it regularly
		
	Dangling wire in canteen. If it is live it may increase fire hazard	Remove and do not allow such things to happen

		
	<p>Open main switch of reliance. One door is not available. Location meter room.</p>	<p>Get it repaired.</p>
		
	<p>Look at the water bottle kept on the electrical panel. Initially it starts with one bottle then N no of thing will be kept in future. Location meter room.</p>	<p>Do not allow such practices</p>
		
	<p>Main emergency switch of entire college. Is it known to key people?</p>	<p>Make it known to key people.</p>

		
	Emergency switch at first floor. Is it known to key people?	Make it known to key people.
		
	No access behind the main panel for doing any emergency repair.	Provide safe access.
		
	Electrical switches should never be kept open like this. Dirt, dust enters, deposits and increases the resistance, draws more current, increases hazard of fire.	Do not allow such practice of keeping switches open.

		
	<p>Material is lying near switch board panel i.e. in Meter Room</p>	<p>Meter room should always be clean like a hospital</p>
		
	<p>No rubber matting is seen in any of the meter room, ground floor, first or second floor.</p>	<p>Install rubber matting in each meter room on every floor.</p>
		
	<p>Wires have come out below the main panel cupboard in meter</p>	<p>See that this should not happen. All wiring should be neatly lay down</p>

	room.	below the panel cupboard.
		
	See the locking of the electric panel cupboard. It is locked with an ordinary wire. Anybody may open it and may get electricuted.	Provide a right type of lock.
		
	See the clutter of wiring in meter room and N no. of other garbage in this area. This increases fire hazard.	Make systematic wiring. Keep it clean like a hospital.
		
	See this loose temporary wiring. Increase the chances of fire and electrocution.	Make permanent systematic wiring.

		
	Electrical connection without plugtop. It increases sparking in turn fire hazard, and electricution hazard.	Use of plug top is a must.
		
	Burnt socket is indicator of overdrawing of current. Not investigated.	Investigate why it got burnt. Loose connection or any other reason and take corrective action.
		
	Broken switch in 019.	Repair
		
	Why this panel open? Location first	Close it fully.

floor. If there is leakage current, it may kill some one.



Loose wiring outside the MRK lab

Remove it immediately. Do not allow such things to happen.






Cover open to give connection





Do not allow such unsafe practices









Look at these loose connections going thru doors.




Do not allow such loose connections.






		
	Emergency stop button cover is missing	Repair it.
		
	See the clutter of wiring in the pump room.	Remove it with immediate effect
		
	Dangling switch in pump room	Remove it

		
	Clutter of wiring in pump room	Remove it.
		
	Broken electrical pipes on walkway.	They should not be on walkway. Repair them with immediate effect.
		
	Gattafosse lab – clutter of wiring behind computers.	Make it systematic
		
	Dangling wires in Jasco Anatex lab	Remove it.



		
	<p>Dangling electric wire in dressing room.</p>	<p>Remove it.</p>
		
	<p>Broken support to tube light. Room 209</p>	<p>Repair the same</p>
		
	<p>No protection above these electric wires on terrace.</p>	<p>Put some protection either wooden or flexible hose type, whatever.</p>




		
	All this is open for entry of dirt, dust, animal. Location – terrace.	Close it.
3.4	Electrical earthing	
		
	This earth connection is protected properly but not maintained. Look at the dry leaves lying. Earth resistance is not checked. Wireman is saying it is checked monthly once.	Maintain regularly and check earth resistance at least twice a week. Remember this earthing is a heart of electrical safety of entire building.
		
	This earthing is without any protection. No earth resistance is checked. Wireman is saying it is checked monthly once.	Build earthing with proper protection. Check earth resistance at least twice a week. Remember this earthing is a heart of electrical safety of entire building.




3.5	Combustible fire hazards	
		
	Collection of dry leaves increase combustible fire hazard.	See that same is cleaned every day.
		
	Collection of gunny bags etc.increase fire hazard.	It should be in container and regularly removed.
		
	Paper scrap outside MRK lab	Do allow to collect such material. Dispose it off immediately.

		
	Storage of combustible material in Merico lab area.	Remove it. If necessary keep water expelling type of fire extinguisher.
		
	Heap of gunny bags at south side of building is increasing fire hazard	Do allow to collect such material. Dispose it off immediately
	 	
	These dry leaves increase fire hazard,	Remove them regularly.
		

	Storage of combustible hazard below the tables in Gattafosse lab.	Remove it.
		
	Old removed pipes of burners.	Dispose them off
		
	Heap of papers kept on wooden racks in 006	Dispose them off.
		
	<ul style="list-style-type: none"> • Room 005 • Plastic kept on table itself is a fire hazard • To edge protection to avoid falling of glass items. 	<ul style="list-style-type: none"> • Use non combustible material • Provide edge protection

		
	<p>Room no. 123- storage of boxes upto the ceiling. Increases the combustible hazard.</p>	<p>Do not allow such type of storage. Remove it.</p>
	<p>One bagful of raddi papers were lying in room no. 119F</p>	<p>Remove it.</p>
		
	<p>In Merico lab area: room no. 201 to 207 –</p> <ul style="list-style-type: none"> • All combustible material lying 	<ul style="list-style-type: none"> • Remove as urgently as possible • Keep fire extinguisher

	<ul style="list-style-type: none"> No water expelling type of fire extinguisher kept. 	
		
	This room on terrace contains 500files. No fire extinguisher.	Install water expelling type of fire extinguisher
3.6	Fire fighting	
		
	All people staying in nearby chawls are to be vacated during fire immediately.	This item may be considered during on site emergemncy plan.
		

	This cracked glass may create a big hazard during fire.	Replace it immediately.
		
	Fire buckets near Guttefosse lab – kept below on floor.	Not right. Make a separate covered stand for them.
		
	Fire hydrant is buried below the heap agreegate	If it is working, do not allow the same to be buried. If not working, remove it.
		
	Well is available. Separate water storage tank can be built for fighting fire.	Build Separate water storage tank can be built for fighting fire
	No fire extinguisher was seen in Jasco Anatex lab.	DCP or Foam type is recommended.



Fire extinguishers are kept below near room 001

They should be kept at easily removable height. Distributed among the rooms.



Fire extinguishers in room no. 2 – are kept on the floor.



They should be kept at easily removable height..





Fire extinguisher is kept on floor in 019



They should be kept at easily removable height as kept in

		microbiological lab.019
		
	Room 223- One fire bucket kept on floor. Not right	Keep it on stand
	Server room in Dr. Cutinho's cabin: No separate arrangement is made to fight fire in server room.	Get it designed from specialist and implement the same.
3.7	Fire Prevention	
	In Jasco Anatex lab no idea about static charge developed in solvents while pouring. They have no idea about earthing and bonding.	Train concerned persons in the concept of earthing and bonding of static charge.
		
	Whether these refrigerators are explosion proof – not known.	Whenever necessary, explosion proof refrigerator may be used.

		
	Refrigerator in 019 – whether explosion proof or not is not known.	Whenever necessary, explosion proof refrigerator may be used.
3.8	Safety at height	
		
	See the way this person is standing on stool. He is standing at the edge and other things are kept on stool. Any minor change in centre of gravity of the person make him fall and break his bones.	Working at height is the most hazardous work. Do not allow such unsafe practices so that person should not fall down.



Unsafe access for storage at height in security cabin




Provide safe access for height









Access ladder for taking out material is not safe. No place for keeping material.





Various types of ladders are available in market. You may get ladder suitable to solve your problem.






		
<ul style="list-style-type: none">•<ul style="list-style-type: none">• No railing around on the area shown by red arrows. If a person falls on the black part of roof he may fall down along blue line.• If the black color roof is of asbestos, person walking on it may fall thru it because it is fragile.	<ul style="list-style-type: none">• Install railing around with two railing and toe board• Check the material of roof and decide remedial measures.	
		
<ul style="list-style-type: none">•<ul style="list-style-type: none">• No safe access to repair these exhausts up to the top.	<ul style="list-style-type: none">• Make safe access to repair these exhausts up to the top.	
3.9	Hand Tools and Powered Tools	
		
	Unguarded circular saw in Merico lab	Do not allow to use such unsafe powered tools

		
	Damaged head of chisel	Do not allow to use such unsafe hand tools
		
	Nailed handle of hammer.	Do not allow to use such unsafe hand tools
		
	Unsafe storage of hand tools – one over the other.	Systematic storage of hand tools is a must. A separate box should be used for storage.

		
	Mushroomed headed chisel	Do not allow to use such unsafe hand tools
		
	Pistol drill without plug top	Do not allow any powered tool without plug top.
3.10	Unsafe Dress	
		
	Wearing lungi in college premises is totally unsafe.	Do not allow anybody to wear lungi in college premises. It is unsafe during emergency
3.11	Bird hazard	

		
	Bird are a haard for electric connection, ventilation ducts	Use suitable bird repellant to stop these birds entering in college premises
3.12	Structural Problems	
		
	Green vegetation is allowed to increase in structure.	It is dangerous. Remove it.
		
	This tree may make this wall weak	Remove it.
3.13	Emergency Plan	
		
	Use of this ground? No lights on this ground and foot ball ground at	This ground may be useful for evacuation place during emergency.

	night	Provide lighting.
	No glowing signs for exit are put on the doors of room, corridor walls.	Install glowing signs for exit are put on the doors of room, corridor walls.
	Room no. 223 : Wet analysis lab – There is only one emergency exit. Is it ok?	Good. One is provided. Think of additional.
3.14	Access	
		
	Unsafe access to basement. Water is collected inside, cannt walk and see.	If this basement is not required remove it or make it clean and use. Safe access to and egress from basement is a must.
		
	No safe access is available in 006 i.e. store of 005.	Make safe access or change the room
		
	This wooden unsafe ladder was lying outside the room 029. It is totally unsafe. Broken styles, broken rungs.	Destroy this ladder with immediate effect.






Access ladder for the loft in room no. 117 and 118. Ladder is not extended by one metre length at landing point




Extend ladder by 1m at landing point. Instead of ladder staircase will be more safe.





No safe access is made to repair

Make safe access to repair this dish.

	this dish.	
		
	Unsafe access ladder. No hand railing. No safe landing. Landing area- no guards.	Make railing to the ladder. Make safe platform with railing and toe board around the platform.
		
	Unsafe access even to go upto the ladder.	Make safe access.
		
<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • No safe supports provided for this pipeline on terrace • No safe access is made above this pipeline 	<ul style="list-style-type: none"> • Make safe supports • Make safe access above this pipeline.

		<ul style="list-style-type: none">
<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Broken step not repaired No railing to hold 	<ul style="list-style-type: none"> Repair the step Add railing
3.15 PPE		
	In Gattafosse lab, Jasco Anatex lab. They do not use any PPE except handgloves. A very casual approach to safety was seen among the working persons	Not right. Casual approach to safety is not acceptable.
		
	No compulsion on use of PPE to students and instructors - hand gloves	Use of PPE should be compulsory to Instructors first then they can ask to students
		
<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> No compulsion on use of PPE to students and instructors – safety foot wear No compulsion on use of PPE to students and 	<ul style="list-style-type: none"> Use of PPE should be compulsory to Instructors first then they can ask to students – safety foot wear. apron

	instructors – Apron	
		
	Burn resistant hand gloves or suitable tongs are not used/ provided	Provide burn resistant hand gloves or tongs.
	No system of hand cleaning with soap in college anywhere.	Provide soap at every hand washing place.
	It wa clearly written in Manaual of SOP that N95 mask to be used but why it was written as appropriate PPE to be used.	Remove ambiguity.
		
	Room 223 – Good instruction about wearing of PPE'	Good. Keep it up.
	Eye wash and shower in second passage in front of ladies and gents toilets – It is never tested and kept in use.	Do testing regularly.

		
	Instruction on room 221	Good. Continue.
3.16	Storage of Chemicals	
		
	Concerned persons have no idea about safety in storage of chemicals.	Train them in Safety In Storage of chemicals
	No MSDS for chemicals are not available.	Make it available.



Even the basic principle of good labelling is missing.

Labelling is a must in chemical storage.






Flammable chemicals are stored together.




All hazardous chemicals to be stored separately.









Alcohol cans are stored with other material in 007 store.

Store separately.

		
	<p>Alphabetical storage of chemicals is made. It is dangerous as Incompatible chemicals such as Acetic acid and acetaldehyde may be stored side by side.</p>	<p>Store them as per their hazardous properties. See my presentation on this subject seperately attached.</p>
	<p>Alcohol can of 25 litres was kept in room no. 119F</p>	<p>Store seperately</p>
		
	<p>Displayed in room no. 223 – Not known to all.</p>	<p>Train all concerned about these hazardous chemical and implement the rquirement.</p>
		
	<p>Storage of chemicals in passage in front of ladies and gents toilet. Is it</p>	<p>Chemical storage should not be in passage.</p>

	right.	
3.17	General Store	
		
	Storing upto ceiling height is absolutely dangerous.	Do not allow such unsafe storage
		
	<ul style="list-style-type: none"> • All storage mixed together. • Glass items stored without any barrier. They may fall and break. • No labelling 	<ul style="list-style-type: none"> • Store items seperately • Store glass items seperately with barrier to arrest their fall from storage rack. • Do labelling to every item
		
	<ul style="list-style-type: none"> • Cumbustible material (books) stored with all other items • No water expelling type of fire extinguishers nearby 	<ul style="list-style-type: none"> • Separate storage for combustible material • Cumbustible material requires water expelling type of fire extinguishers.

		
	<ul style="list-style-type: none"> • Bad housekeeping inside the cupboards 	<ul style="list-style-type: none"> • All rules of good housekeeping applied to the items stored in cupboards.
3.18	Gas Cylinder Safety	
		
	<p>Dial Indicators of these gas cylinders are not visible. Whether they are working or not , not known</p>	<p>Clean them. See that they are working.</p>
		
	<p>What is this wire? Not known. Why it is not connected? Not known.</p>	<p>Either connect it or remove it.</p>





		
	Chaining is missing for middle gas cylinder.	Cylinders must always be chained
	Whether these cylinders are filled or empty? Not known.	Filled and empty cylinders should be stored separately.
	 	
	Is it the use of gas cylinder?	Do not allow such practices




		
	CO2 cylinders in 019 – not chained around.	Chaining is a must. Organize Gas cylinder safety training to the concerned person
		
	One gas cylinder in trolley, other is not.	Gas cylinder in trolley is good. Other just standing
3.19	Canteen safety	








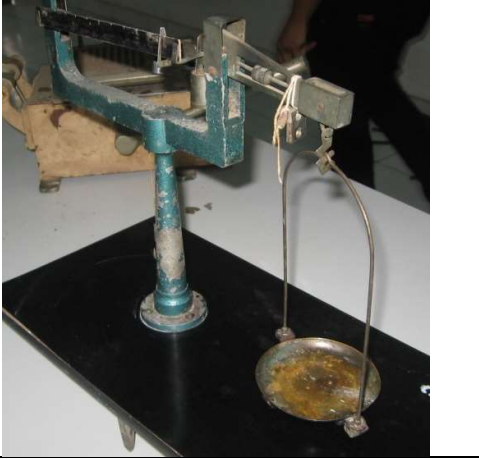

See the storage in canteen.
Clothes, utensiels, vegetables,
grain bags all are stored together.
No sytem for storage.




Separate area for each items. Grain
etc. in dabbas with lables. Separate
place for vegetables.

		
	Water tank in canteen is not cleaned for last two years.	Clean it immediately. Clean it for every 6 months.
		
	Look at the crack on the wall of toilet place inside the canteen. Is it surface or deep.	Repair it immediately.
	 	

		
	<ul style="list-style-type: none"> • No cleaning of burner as done. • Regular check up of connection not done • No changing of rubber piping done 	<ul style="list-style-type: none"> • Clean burner regularly • Get connections checked regularly • Regular check up and change of rubber piping is necessary
		
	No cover on this ragada machine. Someone may put his hand inside while it is running and get injured.	Put cover. Cover should be such that if it is opened ragada rotation should stop.
		
	These cylinders are placed in a cage inside canteen. Good. But additional things are kept inside.	Do not allow any other storage inside this gas cylinder cage.
	No training is given to canteen workers about gas cylinder safety.	Impart canteen workers training on gas cylinder safety.




		
	Plastic trays are kept near gas cylinders.	Do any combustible material or flammable liquid near gas cylinder.
3.20	Ventilation	
	 	
	Exhaust fan is ineffective when windows below are open. Inlet air from from window gets exhausted. Contaminated air doesn't.	Use exhaust fan in totally enclosed room.
		
	Fuming hoods in room 117 with local exhaust.	Maintain regularly.

3.21	Instruments	
		
	<p>So much particles of material is deposited on balance? How will it give correct reading?</p>	<p>Clean regularly.</p>
		
	<p>Look at this balance too. See the pan. So much deposition of material. It will corrod it and it will give wrong reading.</p>	<p>Clean regularly.</p>
		
	<p>Tablet molding machine – corroded. Operation not known. Upper cover spring not present that is why it bangs on.</p>	<p>Clean, repair, know the operations.</p>

		
	Corroded furnace.	Repair it.
		
	Dusty beakers	Clean them
		
	Vacuum freeze dryer in room no. 008 – working at hazardous temperature range of -40°C to +40°C.	Read the operating manual and understand the safety features and implement.



	<p>Operating manual of this friability testing apparatus, tablet disintegration testing machine and other not read. Safety instruction therein not known.</p>	<p>Operating manual of this friability testing apparatus and other's should be read. Safety instruction therein should be read, understood and followed.</p>
	<p>Machine room no. 1 & 2 – There are N no. of machines in this room. Whichever machines are operated Operating manual and safety instructions therein are read? Understood? Used? ---Especially freeze drier, differential calorimeter (- 100°C to – 250°C) are absolutely dangerous.</p>	<p>Operating manual of all the machines in room no. 1 & 2 should be read. Safety instruction therein should be read, understood and implemented.</p>
	<p>Mini spray drier – requires compressed air at 2 bar pressure.</p>	<p>Study hazards of compressed air and train the concerned person for</p>

	But compressed air hazards are not known to them.	compressed air hazard. Implement the precautions.
		
	Why this machine is mounted on floor. Tripping hazard.	Mount at height
<ul style="list-style-type: none">•<ul style="list-style-type: none">• In 015- Pharmaceutical laboratory – old different scannery calorimetry parts are lying.• In 015 old dissolution rate task apparatus discarded but not thrown.	<ul style="list-style-type: none">• Throw all not required apparatus or dispose them off.• Throw all not required apparatus or dispose them off.	
		
	Auto clamp – Water at 1kg/cm ² pressure and at 120°C. Manual not read.	Read safety instruction from manual, understand and implement,
		
	Old corroded machine.	If not useful, dispose it off.



Distilled water plant. 5 coils inside.
No temperature measured.

Temperature measurement is a must.
Install it.






Hot air oven works at 160°C.
Calibration of meter?

This should be done regularly to
avoid any accident.



Lift is supported on one spring. Is
this right?

Normally it is supported by 4 springs.
Get it checked.

	In room no. 119: - 2 nos. mechanical balance, Incubator door not fitting, sonicator not working, 2 nos. vacuum pump obsolete. Why they are there.	All of them either repair or dispose off.
	In room no. 119E: - 2 nos. fish tanks, four degree cabinets are not working	All of them either repair or dispose off.
	In room no. 119: PG lab: - One heating mantle not working	either repair or dispose off.
3.22	Machine guarding	
		
	Unguarded stirrer – rotating parts unguarded.	Guarded stirrer are available in your 015 – Pharmaceutical lab. Either purchase them and discard these or guard these.
		
	It is used only for demonstration not used. If used these blades are unguarded. They are dangerous.	Provide guard (if necessary transparent) to this machine.



Belt and pulley unguarded from inside.

Provide full guarding.



Rotating blades inside are totally unguarded.




Guard them.


		
	Inside rotating blades are open to access. No guard.	Install guards.
		
	Ungarded rotating blades.	Guard them.









Unguarded table place –
flywheel-belt-pulley no guard. Point
of operation no. guard.

Get it guarded fully.

		
	No guard on upper side	Install guard
		
	In 015- Pharmaceutical laboratory – bulk density apparatus not guarded	Install guard
3.23	Corrosion	
		
	Corroded window frames in 019 lab.	Change it.

		
	Corroded door of fridge.	Either change it or dispose off.
3.24	Room no. 031	
		
<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Broken entry door • No light inside the room • No fan • No fire extinguisher 	<ul style="list-style-type: none"> • Repair the same • Provide light • Provide fan • Provide fire extinguisher

		
	Haphazard storage inside room 031	Make it systematic
3.25	Room 029	
	 	
•	<ul style="list-style-type: none"> • This room contains all combustible material, old records. • All haphazardly stored. No systematic storage. • No water expelling type of fire extinguisher available. 	<ul style="list-style-type: none"> • Either remove and destroy or keep it systematically • Make it systematic • Keep water expelling type of extinguishers.
3.26	Room 210	
•	<ul style="list-style-type: none"> • Biohazard room. UV radiation. It was told that safety guidelines are given by Haffkin. They are not displayed outside the room. 	<ul style="list-style-type: none"> • Display safety guidelines given by Haffkin outside the room.
3.27	First aid box	

		
	First aid box in passage in front ladies and gents toilet- It is in lock and key. First aid box in lock and key? Why?	First aid box must be in 'available' condition.
3.28	Library	
	 	
	<ul style="list-style-type: none"> • So many books and 	<ul style="list-style-type: none"> • Sort them out in two groups –

	<p>periodicals. All are not required regularly</p> <ul style="list-style-type: none"> • Unnecessary storage increase fire load. • Suitable fire extinguishers were not seen 	<p>required and nonrequired.</p> <ul style="list-style-type: none"> • Make separate storage of non-requireds so that it will reduce hazard of combustible load. • Keep water expelling type of extinguishers
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Part 4 : Safety Management

Sr. No.	Observation	Recommendation
4.1	Safety Department	
	There is no safety department in college	If possible, safety department may be prepared so that it can take responsibility of safety inspection, organizing safety training etc. In charge of safety department should be minimum B.Sc. – Chemical + Advance Dip. In Industrial Safety (Or fire and safety)
4.2	Safety Training	
	Security person do not know how to use fire extinguishers	Impart training on use of fire extinguishers to security people
	They Cannot identify fire hazards in the college	Impart training on identification of fire hazards to security people
	They have only one lathi with them. No training for use of lathi	Impart training on using lathi to security people
	All selected staff not given training on use of fire extinguishers	Impart training on Use of fire extinguishers to selected staff
	'Safety in use of gas cylinder' no training given	Safety in use of gas cylinder' impart training to concerned person
	No training Is imparted in various areas of safety such as 1)'Accident reporting investigation' 2)Safe Storage of chemicals in laboratory' 3)Machine guarding 4)Fire prevention and protection 5)Other necessary subjects as and when necessary	Impart training to the concerned staff as observed
4.3	Accident/ fire incidence reporting	
	No system of accident reporting, fire incidence reporting	Start reporting every minor accident, every fire incidence reporting
	Accident/ fire investigation do not exist.	After every report of accident/ fire do investigation. Find out causes without blame fixing on anybody. Decide remedial measure in order to prevent reoccurrence of such incident.
4.4	Safety Inspection	

	Inspection of premises from Safety hazard and fire hazard not done.	It should be done regularly by the concerned person
4.5	Housekeeping	
	At present no understanding of housekeeping apart from common understanding.	Teach all concerned Japanese 5-S way of housekeeping and implement the same
4.6	Storage and handling of material	
	No knowledge of safety in storage of chemicals	Impart training and implement.
4.7	Emergency Plan	
	<ul style="list-style-type: none"> There is no emergency plan in college 	<ul style="list-style-type: none"> Prepare on site emergency plan. Identify Possible emergencies. Prepare different teams. Educate them for their duties on table top exercise Make actual mock drill Identify deficiencies Make improvement in every mock drill
4.8	Safety in Laboratory	
	No study is done so far.	In charge of safety department must study Safety in Laboratory and implement.
4.9	Fire protection	
	Nobody is to look after fire protection	Safety department has to look after this area too

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