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# OSHA: Health And Safety Measures In Hospitals And School Lab

## Health and Safety

The scientific organisation that I will be evaluating is a school laboratory. In this laboratory there are a number of health and safety risks and these risks can be prevented by the use of preventative measures. The laboratory must follow the legislation set out by COSHH as they produce chemicals and waste products when carrying out practicals. There are legislations that the lab have to observe, In addition to the general duties of COSHH, there are additional provisions in Schedule 3 of the regulations, which apply to laboratory and large-scale work with biological agents. The choice of control measures in laboratories is largely based on the hazard group of the biological agent that is being used. Biological agents are grouped into one of four hazard groups from 1 (the lowest) to 4 (highest, e.g. Ebola) based on their ability to infect healthy adults. (Hse.gov.uk, 2019)

## Health and safety measures:

The laboratory observe safety regulations by completing risk assessments of the lab regularly, they assess all and any risks in the lab that may be a potential hazard to anyone during a practical and measure how high the risk is of the hazard, if the risk is high some sort or preventative measure will be put in place. Some health and safety measures in place at the school laboratory would be the requirement to wear protective gear at all times during a practical, an example of protective gear would be the use of a lab coat to protect your clothes and skin from any spillages from potential skin irritants and corrosive substances such as acids that could cause potential damage to the skin. Another example of protective gear would be the use of safety goggles, these protect the eyes from any potential splashes of irritants into the eyes which may lead to blindness. An example of health and safety protocol would be the requirement to stand at all times, this prevents people from tripping over and allows the person to quickly step away from any spillages which may spill over the table and onto someone's lap if they are seated. The person standing will also be able to easily maneuver to eye level to take accurate readings of the practical.

The UK requires well qualified scientists with a sound grounding in practical science.

However both the amount of practical chemistry teaching in schools, and in some cases its quality, have declined in recent years.

The requirements of health and safety legislation are often blamed as a primary reason for this. It is quite astounding that the legislation in place does not ban any chemicals or procedures likely to be used in school chemistry. In addition to this the risk management procedures that apply to practical chemistry teaching in schools also apply to other sciences and to other areas such as physical education in schools. (Hse.gov.uk, 2019)

Under the COSHH Regulations, the Management of Health and Safety at Work Regulations,

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and other legislations and rules, UK employers must carry out a risk assessment before procedures with high risk are undertaken or hazardous chemicals and materials are used or made. Teachers are required to co-operate with their employers by complying with such risk assessments. However, teachers should be aware that mistakes can be made. However different employers use different methods so it does really depend on the employer.

Therefore, before carrying out any practical activity, teachers should always check that the practicals is safe for students and that it is allowed by their employer's risk assessments and does not need modification for their particular circumstances. Any local rules or restrictions issued by the employer must always be obeyed, whatever is recommended here.

Be aware that some practical experiments, such as the use of radioactive material, have certain rules that must be followed.

## **Hazards in a Hospital:**

### **Hazardous agents**

Some hazardous agents include biological agents, chemical agents, disinfectants such as the cleaning spray in a household and sterilants, medications such as antibiotics, hormones, latex gloves, aerosolized medications for example ribavirin and other hazardous waste. Employees working in the hospital will find these hazardous agents almost everywhere in the workplace, for example; the operating room, maintenance, on items of clothing, the cafeteria or break room, laboratory, radiology departmental areas, even office areas.

It is important, then, for hospital managers and employers to design and create both an exposure control plan and a hazard whistleblowing initiative as well as to encourage employees to follow safe work practices. However safe practices in the workplace will be facility and user specific, usually workers should:

- Keep hazardous substances labelled correctly
- Eat-in designated areas as to avoid contamination
- Use PPEs (personal protective equipment), such as face masks, gloves and lab coats
- Use non-latex gloves if they are allergic to latex gloves
- Use proper equipment and tools to handle hazardous objects
- Avoid reusing needles and dispose of them safely and properly
- See where the emergency eyewash stations are designated
- Dispose of hazardous objects safely and properly
- Receive training to report any signs of serious illness related to the substances
- Report incidents of accidental exposure to harmful substances

### **Physical hazards**

Physical hazards include toxic and reactive, corrosive or flammable compressed gases and chemicals; these high temperatures may cause burns or heat stress; mechanical hazards that may cause cuts or wounds, punctures or abrasions; electrocution, exposure to radioactive substances; noise; violence; and slips and falls.

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Precautions for any physical hazards are:

- Wearing appropriate footwear
- Properly cleaning floors and surfaces to keep them as safe walkways
- Storing cylinders correctly so as they don't spill over any potential hazards
- Keeping flammable substances in inert environments as to prevent any accidents
- Wearing PPEs (personal protective equipment), this may include hearing protection if deemed necessary by managers
- Keeping electrical equipment in working condition according to manufacturer standards
- Regularly inspecting tools to make sure they are in working order
- Learning to look out for and care for the signs of dehydration and drinking plenty of water
- Not enter restricted radiation areas, unless given permission to do so
- Treating and interviewing agitated patients in very public and open areas
- Reporting all assaults or threats to an employer or manager

## **Ergonomic hazards**

Ergonomic hazards can include lifting heavy materials, standing for long periods of time and eye strain due to poor lighting. While OSHA does not have a specific regulation dedicated to ergonomics, the agency recently began a comprehensive plan to reduce ergonomic-related injuries. In fact, OSHA expects to release guidelines for nursing homes this year. (Osha.gov, 2019)

For now, hospital owners and employers may wish to conduct risk assessments for particular ergonomic risks in the workplace.

In order to control these risks, healthcare employers may want to:

- Provide assistance for lifting, for example machinery such as stair lifts.
- Lower items to get rid of unnecessary reaching and stretching
- Provide handles on carts
- Tell workers to help each other by using team lifts or if that fails just use machinery and have a no lifting policy in place.
- Perform regular maintenance on lifting devices and equipment wheels
- Encourage exercise to prevent any stress or strain

## **School Lab Hazards:**

### **Physical Hazards:**

Research laboratories will most certainly have physical hazards present. Included here are electrical safety hazards, ergonomic hazards associated with manual lifting and equipment use such as handling any sharp objects.

Any experiments in the lab can result in lab workers standing in awkward and uncomfortable positions. Examples are cleaning the inside of a fume cupboard, looking at slides on a microscope for extended periods of time. What is found acceptable for brief or occasional use

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may become problematic if performed for long durations or very frequently. Pain is a good indicator that something is wrong. Doing work with proper posture is very beneficial. (Interfocus, 2019)

Sharps containers are present in all research labs and following a few safety procedures can help prevent any injuries. Use only puncture-proof and leakproof containers that are clearly labeled. Train employees to never remove the cover or attempt to transfer the contents. Make sure the containers are disposed of correctly and regularly.

Many injuries are related to poor maintenance. Slips, trips, and falls are very common but easily avoided. Start with safe and organized storage areas. Material storage should not create hazards. Bags, containers, bundles, etc., stored in tiers should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse. Keep storage areas free from an accumulation of materials that could cause tripping, fire, explosion, or pest harborage.

### **Chemical hazards:**

The use of chemicals in research laboratories is inevitable, and the potential for harm or injury could be significant if they are misused or mishandled. OSHA has developed two important standards to help mitigate these potential problems. The first is the Hazard Communication standard that deals with requirements for employers to inform and train employees on non-laboratory use of chemicals.

The second, we've already mentioned. Known as the "OSHA Lab Standard," requires laboratories to identify hazards, determine employee exposures, and develop a chemical hygiene plan including standard operating procedures. The "lab standard" applies to the laboratory use of chemicals and mandates written Standard Operating Procedures addressing the particular hazards and precautions required for safe use. This goes hand in hand with experimental design and planning. Both standards require providing material safety data sheets and employee training. (Interfocus, 2019)

### **Electrical hazards:**

Electrical hazards in labs can be very dangerous especially since power outlets are prominent in the class and easily identified and seen, some outlets even on the table in front of the students. This can lead to students messing around with the electrical outlets by sticking things in the outlets and turning them on which can be extremely dangerous even life-threatening. Another electrical hazards could be the use of worn and overused and outdated equipment which may lead to electrocution.

There are many different scientific organisations that have to comply to different legislations, this is due to the fact that these organisations may be producing completely different products and waste. For example a hospital has to comply with legislation for disposal of hazardous wastes but would not have to comply to certain COSHH regulations as they produce no fumes or emissions, whereas on the other hand a coal factory for example would have to comply with COSHH regulations but can ignore certain legislations for disposal of hazardous wastes. What dictates the legislation one scientific organisation complied with compared to another would be

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the health and safety executive, they would examine what your company/organisation produced, the methods used and the waste products produced and would set out the legislations and guidelines required by the company to comply with. Potential hazards in each of these examples could affect the compliance with the legislation as it could inhibit the company from following the legislation. An example of a potential hazard doing this would be an accidental fire breaking out and causing the evacuation of the premises. This potential hazard could prevent the company from complying with certain legislation as they have to put the safety of workers above all else. (Hse.gov.uk, 2019)

There are certain practices put in place to prevent workplace injuries in all working environments to help ensure high standards of health and safety are met to comply with regulations. An example of health and safety legislation in the workplace would be the health and safety act of 1974 which both the workers and owners have to comply with. (Hse.gov.uk, 2019) This can be met by having staff fully trained and certified before they start to fully begin their work, this high level of training allows them to complete tasks properly and efficiently. An example of training in the workplace would be the staff have to be trained in first aid to be able to assist fellow co-workers if necessary and potentially save a life, another example would be to train staff in manual lifting so that they are able to pick up big bulky objects safely without risk of injury. A suggestion for improvements to be made would be the addition regular inspections and random drug tests to make sure that the staff and workplace are both safe and clean to use. The inspections would check if the work environment had any potential hazards and give a risk assessment and act on the results of the assessment. Random drug testing staff is a way to make sure staff are keeping safe and focused on their work, this is also a deterrent to prevent any members of staff taking illegal drugs in the future.

There are several risks involved with not making improvements to the work environment. This is because as times change, staff members may forget safety plans and any previous training they may of had, keeping these up to date is vitally important as it allows the staff to adapt to any changes in legislation and in the workplace.

In a hospital the owners and managers running the hospital should meet regularly with the members of staff and discuss health and safety issues. Encourage them to share their ideas and thoughts on how to improve safety in the workplace. The owners should also provide first aid training for staff so they are prepared to deal with emergency situations. This allows the hospital to maintain high standards of health and safety. (Small Business BC, 2019)

In a coal factory, owners and managers should regularly check all tools and equipment on site to ensure that they are looked after and properly maintained and safe to use. Also check storage areas and review safe work procedures. For example are boxes in your storage area stacked in a safe manner? Are the employees properly trained on how to manually lift objects without bringing injury to themselves? Do your employees know the procedure to follow during a fire drill and if so are all exits maintained correctly and fire alarms also?

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