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An Examination of the Biosafety and Ethical Guidelines in the Science Labs at Baniwaleed University

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ABSTRACT

The aim of this study was to examine the prevalence rates of safety and work ethics in the academic laboratories of the Faculty of Science, Baniwaleed University among professors, technicians, students and workers. The data was collected through a questionnaire consisting of (11) questions applied to (30) professors, technicians, students and workers. The results showed that the majority of the segment used did not have sufficient information about safety and work ethics in the laboratories. The study produced a number of recommendations to help protect people, equipment and property in university laboratories.

Keywords- Security and safety, work ethics, academic laboratories, Baniwaleed University.

I. INTRODUCTION

In university laboratories that carry out laboratory research, safety and work ethics are crucial. Such laboratories cover many topics related to biology, e.g., in addition to chemistry and its contents. G. A. Microbes, cells, viruses, and genes. The organization and administration of these laboratories is crucial to guaranteeing the security of the workforce and the neighborhood.

Creating a safe and healthy work environment for researchers and laboratory personnel is the aim of biosafety, which also aims to shield them from chemical and biological risks. The ideals and moral guidelines that researchers and staff in biological laboratories are required to uphold are referred to as bioethics. The rights of people, animals, and the environment must all be respected, and data and findings must be handled truthfully and openly by researchers. Care and compassion must be given to laboratory animals in accordance with ethical standards.

Working in university laboratories requires the highest standards of safety and ethics because it is a complex and responsible task. In the end, a framework of laws and regulations is required to oversee bioethics and safety in university laboratories and to carry out routine safety evaluations.

1.1 Objectives

Protecting the lives of professors, technicians, students, workers, and employees as well as their property, tools, and work environment within the university are the main goals of the Office of Biosafety, Occupational Safety, and Environment at the university. s buildings, laboratories, and facilities by putting in place a number of preventive measures meant to guarantee a secure working environment free from occupational hazards and diseases for employees and guests as well as shield priceless supplies, gadgets, and equipment from theft, tampering, or vandalism. The following aims are summed up:

1- Establish and implement an integrated biosecurity, biosecurity, occupational health and environmental system at the university and continuously develop and coordinate with relevant authorities within and outside the university to protect life and property within the environment.

2- Assess the level of biosecurity and safety in the university facilities and work to improve and define the

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conditions and requirements necessary to work in a safe environment that ensures occupational safety.

3- Study, develop and update occupational health as well Safety and environmental systems in university buildings and facilities to ensure their suitability and keeping pace with modern technologies and systems

4. Focus on putting the required tools and equipment into practice in order to raise safety standards and avert mishaps that could endanger people, property, equipment, or supplies at Baniwaleed University.

5- Regular monitoring of the University facilities and use of all available capacities to ensure compliance with an appropriate level of security, biosecurity and occupational health for its employees.

6. Be ready for and respond to accidents and emergencies. Develop a plan for handling accidents and natural disasters and keep other university departments informed about them.

7- In order to improve human and professional competencies in the field of biosecurity and biohazard, training and qualification programs should be implemented.

8- Ensuring that the environmental safety and health principles are applied in all operations and maintenance procedures, as well as suggesting actions that enable the preservation of the environment and its defense against pollution.

9- Focus on the education and training of university staff members, acquaint them with their responsibilities and safety precautions in case of emergencies or major disasters, and provide them with civil defense training so they can take advantage of it when needed.

1.2 Significance of the Study

The significance of the study lies in protecting students, faculty members, technicians, students, workers, as well as property, equipment, devices and the working environment within the buildings, laboratories and facilities of the University by implementing a series of preventive measures.

1.3 Study questions:

1. Are you familiar with biosafety and biosafety in laboratories?
2 Do you think biosafety in laboratories is important?
3. Are biosafety procedures used in the laboratory where you work?
4. Are there clear procedures for handling hazardous biomaterials in the laboratory?
5. Do you receive regular training on biosecurity?
6. Are there procedures for the safe disposal of hazardous biomaterials in the laboratory?
7. Is appropriate personal protective equipment worn when working in the laboratory?
8. Are disinfection and sterilization processes carried out regularly in the laboratory?
9. Do you feel that there is sufficient awareness of biosafety in the laboratory?
10. Are there mechanisms for reporting biological hazards in the laboratory?
11. Do you think biosafety can be improved in the laboratory?

1.4 Study Limitations:

This study was conducted in the laboratories of Baniwaleed University, Faculty of Science.

II. METHODOLOGY

2.1 Study sample:

Forty students, faculty members, and staff members worked in the laboratories of Baniwaleed University's Faculty of Science, making up the matching study sample. After the questionnaires were collected, thirty of the completed surveys were returned, and the respondents, who represented 75% of the study community, made up the study's final sample. The final study sample's individual distribution is displayed in Table (1).

Table 1: The final study sample's

Number	Attribute
7	Lecturer
6	Laboratory Technician
12	Student
5	Worker

III. RESULTS AND DISCUSSION

There were forty surveys given out. It was evident from the questionnaire that most of the segment used lacked adequate knowledge of biosafety and bioethics for a number of reasons:-

1- Lack of good and accurate focus on the part of staff and technicians.

2- Not taking the problem seriously and making it one of the basic rather than secondary requirements.

3- Lack of sufficient skills such as providing sufficient safety equipment and the correct way to work on it.

4. Absence of workshops and classes, both at the university and even at the local level.

5. The university does not have a biosecurity unit or a leader to support staff in their work.

6- The importance of complying with biosecurity standards The Results show that compliance with biosafety standards in university laboratories is necessary to ensure the safety of workers, students and the surrounding environment. These standards should include measures such as good laboratory planning, adequate worker training and appropriate preventive measures.

7. Providing materials and safety equipment required for productive and safe work in laboratories. Workers should be outfitted with the proper personal protective equipment, and equipment should undergo routine maintenance and inspections.

8. Promote training and awareness Universities should make biosafety more widely known and make sure that staff and students receive the necessary instruction. It is

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important to emphasize safe handling and disposal techniques for hazardous materials.

9. Frequent evaluation and monitoring: Lab safety needs to be continually evaluated and observed. One can employ instruments like internal audits and the confirmation of adherence to biosecurity regulations.

10. Effective cooperation and communication are essential between all parties involved, including the administration of the university and the laboratory personnel. Improving preventative strategies and boosting biological safety both benefit from open and honest communication.

These are a few potential conclusions regarding university lab biosafety. Conclusions ought to be made in light of the information gathered, examined, and evaluated.

IV. RECOMMENDATIONS

4.1 Workplace chemical safety precautions

Chemical storage done correctly:

• Conduct regular inspections of chemical inventory.

• Update chemical inventory at least annually or as requested by management.

• Keep all chemicals in their original containers.

• Do not exceed permitted levels of hazardous chemicals.

• Maintain records of inventory of chemicals in circulation including all data for each material.

• Do not leave or store chemicals on the floor or on benches.

• When handling, storing, and transporting hazardous chemicals, take the appropriate safety measures to safeguard the workers and the facility.

• Determining the best ways to store chemicals and the conditions under which they must be disposed of.

• Identification cards for each chemical used in the lab are provided. a statement about the chemical composition, level of danger, scientific and brand names, and safety measures. The facility needs to get the information from its supplier that is listed in these materials.

• Educating employees about the use of carcinogens and hazardous chemicals, outlining the risks involved and providing safety precautions.

4.2 Handling chemicals:

• Before using, make sure it is the correct substance by reading the label.

• Put on appropriate, long-lasting gloves before working with chemicals.

• Avoid putting your hands in contact with chemicals directly. For this, a specific type of spoon is required. • For hotter liquids, use a hot water bath.

• The concentrated acid must be added gradually to the water when diluting acids, not the other way around.

• Take chemical solutions out of the beaker rather than straight from the chemical bottle. • Avoid breathing in the vapors from the container and avoid placing it right under your nose.

4.3 General rules for storing chemicals:

Storage criteria:

• Keep chemicals on stable shelves and in cabinets.

• Attach shelves to the wall and the floor.

• Avoid raising storage cabinets higher than your eyes.

• Verify that locks are installed in all storage spaces.

• Store chemical cabinets in easily accessible areas.

• Make sure the area used for storing chemicals has enough ventilation. Chemicals should be stored and arranged in compatible groups.

• Keep chemicals out of the heat and sunlight.

• Avoid piling bottles on top of one another.

• It is best to put heavy containers at the bottom.

• Every month, make sure the labels are still on the storage chemicals and there are no indications of spoiling.

• Regularly update the chemical inventory list.

4.4 Important fire recommendations:

• Check that the extinguisher is functioning properly.

• Pay attention to the weight of the carbon dioxide extinguisher and the display on the extinguisher.

• Pay attention to the maintenance date. The fire extinguisher has a note on it.

• Make an appointment with a specialized company every six months to have the fire extinguisher's preventive maintenance completed.

• Make quick contact with a specialized company to have the fire extinguisher emptied and cleaned after use.

• Find the fire extinguishers that are currently in place and assign a number to each.

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