Microbiology lap.
1st lap.

Basma Bashar 26-9-2024

Safety and security in laboratories

Laboratory: It is the place where many experiments and practical research are conducted. It contains solid and liquid chemical materials. It may also contain gases and vapors. Working in the laboratory can be extremely safe if it is well designed and meets security and safety requirements.

Conditions necessary to achieve security and safety in laboratories

1- Educate students on the location and use of all emergency and safety equipment before starting work inside the laboratory.

2- Know the location and how to close the gas, water valves and electricity in the laboratory.

3- Know the location and how to use all equipment in emergency situations (eye wash shower, first aid kit, etc.

Emergency shower Eye wash shower First aid kit

Microbiology laboratory: It is a specialized laboratory designed to conduct experiments and research on living microorganisms such as bacteria, fungi and viruses. This type of laboratory is equipped with specialized tools and equipment to handle microorganisms safely, as well as sterile environments and containment systems to prevent the spread of infection and infectious agents. Microbiology laboratories are used for a variety of important purposes such as identifying unknown microorganisms, testing the effectiveness of antibiotics, developing vaccines and researching the genetic makeup of microorganisms.

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Safety instructions in the microbiology laboratory

1 - Ensure that students wear appropriate **Personal Protective Equipment** (PPE) such as masks, coats and gloves.

2 - Clean the work table (Bench) with the appropriate disinfectant before and after work.

3 - Wash hands well with soap and water before putting on gloves and after finishing laboratory work or after removing protective clothing and before leaving the laboratory.

4 - Do not carry samples or microbial cultures outside the laboratory.

5 - Do not touch the eyes or mouth while working in the laboratory.

6 - Avoid taking or eating or drinking inside the laboratory.

7 - Do not walk around the laboratory quickly, but rather be careful and attentive, and all necessary sterile tools and materials must be prepared in the sterile work area .

8- Ensure that all sterilized tools are returned to their designated places and that all devices that have been used are closed.

9 - Do not throw damaged materials and dirt in the wash basin.

10 - In the event of accidents or exposure to pathogenic samples, they must be reported immediately to take the necessary measures to maintain everyone's safety.

Some Microbiology Laboratory Equipment

1 - Microscope is a device widely used in the microbiology laboratory to display very small organisms that cannot be seen with the naked eye. It must be handled carefully, the lenses cleaned, traces of oil removed, the slide not left on the microscope and closed after the examination is completed.

The microscope

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2 - Autoclave is a pressurized chamber used in disinfection and sterilization processes. Its principle depends on a combination of three factors: time, pressure and steam.

Autoclave

3 - Incubator is a device that provides the heat necessary for the growth of microorganisms on culture media. It operates at different temperatures according to the purpose of the experiment.

Incubator

4- Water bath: It is set to different temperatures according to the required purpose, whether it is to melt solid media after sterilization and freezing, or to provide a constant and appropriate temperature for a certain test.

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Water bath

5- PH Meter: Used to read the pH of solutions and environments.

6- Delicate scales: used to weigh some environments or chemicals with high accuracy.

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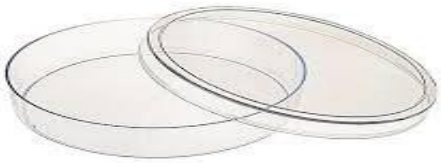
7- Petri Dishes: sterile environments are poured into them and are later used as microbial cultures.



8- Glass Pipettes: used to withdraw a specific and known measure of different liquids.

9- Microscopically Slides: The sample to be examined is placed on them. There is also what is called Cover slide covers, which are placed over the sample placed on the slide for the purpose of examination using a microscope.

10- Bunsen Burner: Used in the process of direct sterilization by flame.

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11- Inoculating Loop: A tool made of platinum or chromium wire, as these metals are characterized by being quickly heated and cooled, as they are used in transporting and cultivating bacteria in different media.

12- Culture Tubes.

13- Holder.

14- Forceps.

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15- Filter Paper: Used to filter liquids and obtain a clear liquid free of impurities.

16- Graduated Flask

17- Graduated Beaker with a wide mouth

18- Sterile Cotton Swab: Used to take a swab from a specific place to study the microbes present after culturing them in a suitable environment.

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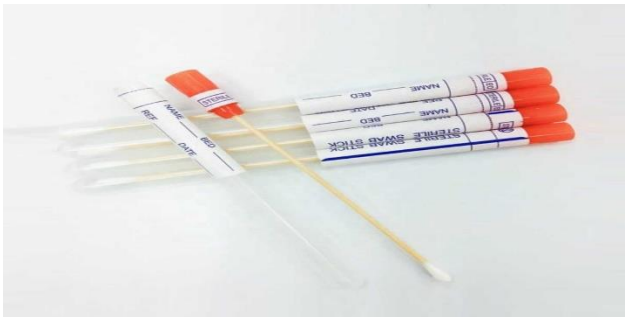

19- Rack

20- spatula.