

Salymbekov University Institution



«AGREED»

Head of the department of biomedical
disciplines

PhD A. A. Jalilova

« 04 » 01 2021 y.



«APPROVED»

Rector

PhD E. J. Jumadilov

2021 y.

General accident prevention technics in the laboratory of biochemistry

Bishkek - 2021

BIOCHEMICAL LABORATORY SAFETY INSTRUCTIONS

I. General rules of work in the laboratory

1. Before starting work in the laboratory, you must carefully familiarize yourself with the topic of the work, understand the purpose of the work, draw up a plan for its implementation, and only after that proceed to the analysis.
2. In a biochemical laboratory, you must work in a dressing gown. Outerwear should be left in the closet or placed in dedicated cabinets in the laboratory.
3. In the laboratory, it is forbidden to talk loudly, eat, smoke, turn on and off switches and touch devices that are not related to this work.
4. The workplace is kept clean, without cluttering it with objects that are not related to this work. Reagents spilled or scattered on the table or floor must be removed immediately and neutralized.
5. Methodological aids, workbooks and laboratory journals intended for work should be protected from water, acid solutions, alkalis and other chemical reagents. Excess books, magazines and notebooks should not be on the desktop.
6. Reagents intended for general use must not be taken to your workplace. In order not to confuse the pipettes used for taking reagents and the stoppers from the flasks, after they need to be returned, the amount of the reagent must be returned. Make sure the reagent you are using is in place before leaving the reagent slide. Dry reagents are taken with a clean spatula or a special spoon.
7. If the reagent is taken in excess and is not completely consumed, it is strictly forbidden to pour it into a bottle with the reagent.
8. Reagents, distilled water, gas and electricity should be used sparingly.
9. At the end of the work, it is necessary to clean the workplace, turn off electric heating and other electrical appliances, close windows and vents, turn off the exhaust ventilation and lighting in the laboratory.
10. It is strictly forbidden to conduct experiments not related to this work without the knowledge of the teacher.

II. Safety and Precautions

1. When working with chemical reagents (especially with solutions of acids and alkalis), you must be careful and careful. Add to the test tube with the reaction mixture those reagents and in such quantities, which are indicated in the guidelines for laboratory work.

2. Do not crowd around slides and pallets with chemical reagents, do not interfere with each other to carry out reactions and use reagents.
3. Spent chemical reagents should be poured into a special container for draining reagents located in the laboratory. It is forbidden to pour the reaction products and the reagents themselves into the sewer.
4. After using reagents, silver, they should be poured into a special jar for silver residues.
5. When diluting concentrated solutions of acids (especially sulfuric) and alkalis, pour the reagent into water in small portions, and not vice versa, stirring the solution. In order to avoid contact of vapors and splashes of acids and alkalis into the eyes, the preparation of solutions should be carried out in safety glasses.
6. It should be remembered that many chemicals are poisonous and can cause poisoning. Therefore, avoid contact with reagents on exposed skin and wash your hands thoroughly after finishing work.
7. All experiments related to the use or formation of gaseous toxic substances, as well as vapors of harmful and foul-smelling compounds, may only be carried out in a fume hood (under draft). In case of stopping the operation of the exhaust ventilation, experiments in the fume hoods must be stopped immediately.
8. Heating solutions in a test tube should be carried out in a water bath. At the same time, it is necessary to provide a sufficient amount of water in the bath tank in order to avoid a permanent and explosive situation.
9. When heating solutions, you should use holders and make sure that the holes of the test tube do not face the worker himself or his neighbor on the working table, which is especially important when heating concentrated solutions of acids and alkalis.
10. Do not bend over a vessel in which the liquid is heated or boiled, avoid splashing in the face and eyes. If it is necessary to detect the smell of vapors or low gas levels, do not inhale them directly from the working container, with a slight movement of your hand, direct the gases towards you and inhale carefully.
11. When separating the sediment from the solution using a centrifuge, before work, you must familiarize yourself with the technical description and operating instructions for the centrifuge and observe the following rules:
 - remove from the centrifuge and the lid into the numbered opposing sockets of the balanced test tubes with the mixture to be separated and water;

ATTENTION !!! When working on a centrifuge, use only special centrifuge (conical) tubes

- close the centrifuge with a lid, set an additional centrifugation speed and turn on the centrifuge with the "Network" switch;
 - after the end of centrifugation, turn off the centrifuge, wait until it stops completely and only then open the lid;
- ATTENTION !!! It is forbidden to enter the centrifuge with an open lid and stop the centrifuge with another or any object.
- remove the tubes with separated sediments from the centrifuge.

12. The centrifuge must be installed on a horizontal plane, securely fixed and grounded. In case

of abnormal operation of the centrifuge (shock, vibration, extraneous noise, etc.), it must be indicated to the teacher or laboratory assistant. It is forbidden to operate a faulty centrifuge.

13. Work with small amounts of flammable and flammable substances (alcohols, ethers, hydrocarbons, ketones, etc.) should be carried out only away from fire and electric heating devices (stoves, muffles, drying cabinets).

14. It is forbidden to carry out experiments with all kinds of explosive and flammable mixtures.

15. After finishing work, the remnants of flammable and combustible liquids should be removed from the workplace into a special metal box or cabinet.

16. It is prohibited in the laboratory:

- obstruct evacuation routes (passages, exits), as well as approaches to fire-extinguishing means and electrical equipment;
- use fire extinguishing means for other purposes;
- smoke, throw matches, cigarette butts and other waste impregnated with other flammable and flammable liquids into trash cans.

17. In the event of a fire or fire, immediately call the fire department by phone "101",

organize the fire department by phone "101".

18. When clothes are ignited, it is necessary to extinguish the fire on the burning one (do not run !!!), throw an asbestos blanket or other improvised means over it - a coat, a dressing gown, a woolen blanket, etc. After extinguishing the fire, proceed to providing first aid.

III. First aid measures

1. In case of burns with chemicals, especially acids and alkalis, the affected area of the skin is quickly washed with plenty of water, and a lotion is applied to the burned area:
 - for burns with acid from a 2% solution of baking soda;
 - in case of burns with alkalis from 2% acetic acid solution.In case of severe burns after first aid, see a doctor.
2. If splashes or vapors of acid or alkali get into your eyes, rinse them immediately with plenty of water, and then dilute with solutions (2-3%) of baking soda or acetic acid. All other activities are carried out only by an ophthalmologist.
3. In case of thermal burns, sprinkle the burned area with sodium bicarbonate (baking soda), starch or talc, or apply lotions of 96% ethyl alcohol, 2% freshly prepared baking soda solution or 2% potassium permanganate solution. Then show the affected area with ointment lubricant from burns. In case of severe burns, the victim should be sent to the first-aid post.
4. In case of poisoning with vapors of harmful and toxic substances, remove the victim to clean air, if necessary, do artificial respiration, give an antidote (milk), call a doctor or send to a first-aid post.
5. In case of poisoning through the esophagus, give the victim a large amount of 2% potassium permanganate solution, induce vomiting, induce antivenom (milk), call a doctor or send to a first-aid post.
6. When cutting hands or face with glass, it is necessary to remove small fragments from the wound, then rinse the wound with 3% hydrogen peroxide solution or 96% ethyl alcohol, and, if necessary, bandage with tincture of iodine.