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USING VISUAL AIDS IN CHEMISTRY LESSONS IMPORTANT ISSUES OF THE RULES

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О НЕОБХОДИМОСТИ ИСПОЛЬЗОВАНИЯ НАГЛЯДНОСТИ НА УРОКАХ ХИМИИ

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Abstract. Visualization should be given priority in lessons for comprehensive mastery of chemistry, and theory should be applied to practice. When visual aids are used, the lesson becomes interesting and memorable. Therefore, students acquire comprehensive knowledge and skills. Also, it is the duty of all chemistry teachers to teach students all the properties of chemicals and how to properly handle them.

Аннотация. Для усвоения химии на уроках следует отдавать приоритет визуализации, а теорию применять на практике. При использовании наглядных пособий урок становится интересным и запоминающимся. Таким образом, студенты приобретают комплексные знания и навыки. Кроме того, обязанность всех учителей химии — научить учеников всем свойствам химических веществ и тому, как правильно с ними обращаться.

Keywords: chemicals, visibility, experience, safety rules.

Ключевые слова: химикаты, видимость, опыт, правила безопасности.

Chemistry is closely related to modern development. Modern people cannot live without using the achievements of chemical science. Whatever we see around us, there are achievements of chemistry. The food we eat, the clothes we wear, the water we drink, the air we breathe, medicines, artificial fibers, plastic masses, etc. As we acquire knowledge about, we become more familiar with the achievements of chemical science. As the brilliant Russian scientist M. V. Lomonosov said, "Chemistry helps people everywhere".

Visualization should be given priority in lessons for comprehensive mastery of chemistry, and theory should be applied to practice. Students should be taught the rules of behavior and safety with chemicals from the first day. Lab work isn't just about doing experiments, it's about knowing how to protect yourself. Chemistry teachers should prepare in advance laboratory equipment such as visual aids, test bottles and flasks, reagents, chemicals related to each lesson and teach students how to work with them. Experiments in the chemical laboratory should be carried out in a white coat, gloves, and protective glasses in accordance with safety rules. When experimenting with chemicals, the mouth of the test bottle should be held either to the air or to the side where no one is present. Do not smell chemicals. Or when we want to know the smell of the substance, we can hold the test bottle outside and wave it towards ourselves with our hand.

In the chemical laboratory, experiments with toxic and foul-smelling substances should be carried out in an absorbent cabinet and kept there. It is dangerous to lean over the heated and boiling liquid. Do not lean towards the bowl when pouring one liquid jet onto another. If any chemical substance gets on the skin, as a first aid, wash the area with plenty of water. Then you

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need to wipe the acid spilled area with a weak tea soda solution, and the alkaline spilled area with a weak vinegar solution and wash it again with water. When conducting experiments with flammable substances, it is necessary to make sure that there is no flame nearby.

Do not mix any unknown substances together. Because, as a result of the reaction, such a toxic substance can be obtained, the smell of which poisons the surrounding people.

Be very careful with acids and alkalis. These should be placed at the back inside the chemical cabinets. Do not touch acids and alkalis as they corrode the skin of the hands and clothes. Test bottles should be held with a tripod during the experiment. In the course of the experiment, we need to know in what proportion the substances should be mixed. Using too much of the chemical can cause the test tube to explode or splash out without a chance to mix because of the intense heat. [2]

It is necessary to try so that visibility in the lessons is the main plan. When teaching the topic "Chemical properties of water", the teacher only puts Na, K, etc. in the water in the test bottle. can throw from active metals. If too much metal is removed, the test glass will explode as a result of the heat, and the resulting alkali will corrode the skin and clothes.

When teaching the topic "Chemical properties of unsaturated hydrocarbons", it is necessary to demonstrate their decolorization of KMnO4 and brominated water through an experiment. For comparison, it should be pointed out to the students that any saturated hydrocarbon or benzene is not discolored by bromine water.

It is interesting to show the silver-mirror reaction, which is a reaction for the determination of aldehydes, and the reaction of the formation of copper 2-glycerate, a bright blue solution, from the interaction of glycerol and copper 2-hydroxide [2].

The Karl-Fisher apparatus, which is used for the analysis of oil and similar organic substances with a small amount of water, and is used to accurately measure the amount of water, is taught in analytical chemistry classes. Centrifuges are used to settle heterogeneous substances contained in mixtures. In addition, the laboratory has a pH meter to determine the pH of the substance, a conductivity meter, a highly sensitive scale, a suction cabinet, a drying cabinet, a high-temperature oven, a water bath, an electrolyzer, etc. there are devices. Applying students' theoretical knowledge to practice by carrying out experiments such as synthesis reactions, acid-base titrations, enthalpy and heat output, determination of cations, iodometric determination of copper in the laboratory gives good results [1].

In the organic chemistry laboratory, pupils and students learn synthesis methods and transformations during class. Using different catalysts, it is possible to study the production of different products, the purity of the synthesized substances, the melting and boiling temperatures in the laboratory [1].

In the laboratory of physical chemistry, various experiments related to the accuracy and sensitivity of temperature measurement and chemical equilibrium are conducted during the lesson. Adsorption columns, a device for studying corrosion in a carbon dioxide environment, and devices for conducting ion exchange reactions are also used here.

Most of the chemicals used in laboratories have explosive properties. For example, such substances include aniline, nitrogen dioxide, barium peroxide, hydrogen peroxide, etc. can be shown. Safety rules should be followed when working with such substances. In case of fire, they should be extinguished with chemical and mechanical air bubbles, water spray and inert gases.

Chemistry teachers should know and follow fire safety rules. If a teacher or student using fire and explosive substances knows their properties and follows certain rules, no serious danger can arise. An alcohol lamp is used during some experiments. To extinguish the alcohol lamp at the end of the experiment, do not blow on it or spray water on it. In order to turn off the alcohol lamp, it is necessary to very carefully put the front cap on the mouth [2, 3].

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Special attention should be paid to the storage rules of some substances. Oxidizers (bertole salt, barium perchlorate, ammonia, sodium nitrate, potassium nitrate potassium, barium, etc.) should be stored in glass, tightly stoppered jars or containers made of plastic material. These reagents should be placed separately on the top shelf of the cabinet. Bromine and chromic anhydride should be stored in glass containers placed in special metal or porcelain containers. It is important to store sodium and barium peroxides in glass jars with kip stoppers. Jars should be placed in metal containers, so that when shaking the glass containers, substances do not spill. Red phosphorus can be stored in tightly closed glass or metal jars [4].

In school chemical laboratories, it is allowed to store volatile and flammable liquids (gasoline, benzene, ether, acetone, toluene, nitrolocks, oil, kerosene, alcohol, etc.) in a metal box not exceeding 3 kg away from heating devices.

When performing laboratory work, students should first familiarize themselves with fire safety measures. As soon as you enter the laboratory, the ventilation system must be activated. To ensure fire safety in the laboratory, the following rules must be followed:

-Information about the properties of the substances in them should be written on the jars with reagents.

- Do not use the substance inside the container without the inscription on it.
- Oily scraps should be stored in metal containers with lids.
- Tables and other furniture cannot be wiped or washed with flammable liquids.
- Cabinets should have a label showing the list of flammable liquids.
- Do not use matches, cigarettes or open flames when working with flammable liquids.
- If flammable liquid is spilled on electric heating devices connected to the network, it should be immediately covered with sand.

An explosion hazard may arise during the evaporation of nitroglycerin, which is formed from a mixture of 3-atom alcohol glycerin and nitric acid. Care should be taken when pouring nitroglycerin from one container to another, or even when repositioning the container. Nitroglycerin solution should be stored in glass containers in a cool and dark place, away from open flame.

A mixture of sulfuric acid with water, alcohol, turpentine, and benzene causes an explosion. In order to avoid this danger, it is necessary to add sulfuric acid very carefully to the indicated substances very carefully, little by little and mixing. Water should never be poured over sulfuric acid, sulfuric acid should be poured over water in a thin stream.

It should be remembered that the interaction of glycerin with nitric and chromate acids, Bertole salt, potassium permanganate can cause an explosion and fire hazard. In case of a fire in the laboratory, explosive and flammable substances should be taken to a safe place immediately.

At the end of the laboratory work, containers with reagents should be closed with a stopper, the electrical network should be disconnected from the source, and the ventilation system should be turned off.

Thus, it is the duty of every chemistry teacher to handle chemicals correctly and teach all their properties to students.

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