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CHEMISTRY, ITS DEVELOPMENT HISTORY AND IMPORTANCE IN THE NATIONAL ECONOMY

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Abstract: This article discusses the significant role of chemistry in the national economy, the use of chemical achievements in the development of industry, the creation of educational materials in the state language on the history of chemistry for participants of continuous chemical education, and provides valuable information related to our country and its prominent scientists.

Key words: chemistry, national economy, raw materials, industry, mineral fertilizers, medicine.

Currently, chemistry plays a crucial role in the national economy, and it can be said that there is no branch of production where chemistry is not applied. As early as 1751, M.V. Lomonosov said: "Chemistry extends its hands into all human activities; wherever we look, the successes achieved thanks to chemistry are evident before our eyes."

Nature provides us with raw materials such as wood, salt, coal, oil, natural gas, and so on. These substances are processed in factories and plants to produce necessary products. For example, iron is found in nature in the form of ore; it is chemically processed to obtain pure iron. Iron is then converted into cast iron and steel. Various machines, household items, and others are made from steel.

Our industry uses achievements of chemistry to produce high-quality special steel, hard alloys, synthetic rubber, plastics, artificial fibers, mineral fertilizers, motor fuels, medicines, paints, and more.

In agriculture, mineral fertilizers and chemical agents for combating pests, diseases, and weeds are widely used.

Since 1931, construction began on the Chirchiq Electrochemical Plant. In 1946, a phosphate fertilizer plant and a sulfuric acid plant were established in the city of Kokand. The discovery of vast natural gas reserves in Bukhara greatly contributed to the development of Uzbekistan's chemical industry.

Nitrogen fertilizer and synthetic fiber plants fueled by gas were built in the cities of Fergana and Navoi. Today, Uzbekistan's farmers' need for nitrogen fertilizers is fully met through these facilities.

The young city of Almalyk has become a center for chemists, hosting a large enterprise producing ammophos fertilizer. Thus, sunny Uzbekistan is becoming a republic where chemistry science and industry are advancing.

History of Chemistry.

In ancient times, chemistry originated in India, China, and Egypt. About 5-6 thousand years ago, people knew about gold, silver, and copper; 3-4 thousand years ago, they knew how to extract copper from ore and make bronze; about 2 thousand years ago, they learned to extract iron from ore; 4-5 thousand years ago, people knew how to make glass, wine, vinegar, medicines, tanning leather, and pottery.

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Theoretical chemistry began to form from the 7th century BC. For example, the philosopher Empedocles claimed that all matter consists of four elements: water, air, earth, and fire. Democritus was the first to say that all matter is made up of invisible particles called atoms.

From the 8th century onwards, many scientists worked on the practical aspects of chemistry. Famous scientists of that era and even now include the Arab alchemist Jabir ibn Hayyan, Central Asian scholars such as Al-Farabi (950), Abu Rayhan Beruni (973–1048), Al-Khwarizmi, Abu Ali Ibn Sina (980–1037), and others, who made significant contributions to chemistry.

Beruni wrote over 150 works, many of which dealt with minerals. He determined the relative weights of many elements. He proposed ideas that matter is eternal and can exist in various forms.

In the 17th century, the Irish scientist Robert Boyle defined elements as substances that cannot be broken down into simpler substances, introducing the modern meaning of the term to science.

The famous Russian scientist M.V. Lomonosov disproved the phlogiston ("fire matter") theory. In 1748, he formulated his law: when a substance decreases in one body, an equivalent amount increases in another; therefore, the total amount of matter remains constant. This law applies to motion as well. Lomonosov's law is now known as the law of conservation of mass: the mass of reactants in a chemical reaction equals the mass of the products.

French scientist A. Lavoisier confirmed Lomonosov's laws experimentally. In 1781, Lomonosov synthesized carbon dioxide gas by 10 different methods and found the mass ratio of carbon to oxygen in the gas to be 3:8. Based on this, the law of definite proportions was formulated, stating that any pure chemical compound has a fixed quantitative composition regardless of how it was obtained.

In conclusion, without studying the history of chemistry, acquiring modern knowledge is one-sided. The long and arduous history of chemistry, marked by successes and failures, requires an objective and fair assessment. Honoring thousands of researchers, enthusiasts, and those who contributed to this ancient science and organizing chemical education based on historical principles is both a duty and a necessity.

Creating educational materials on the history of chemistry in the state language, incorporating information about our country and its scientists, and making necessary historical corrections is a timely and appropriate task.

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