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RATIONAL USE OF MINERAL RESOURCES

Mineral resources or resources of the bowels of the earth, which are also called minerals or mineral raw materials, as fuel and energy resources, are the basis for the development of modern industry and scientific and technological progress.

Many industries are wholly or partly based on mineral raw materials:

- ferrous and non-ferrous metallurgy
- chemical industry
- power plants operating on mineral fuel
- construction industry

Further development of the world economy is inconceivable without the widespread use of fuel, energy and mineral resources.

Today, all fossil materials (solid, liquid and gaseous) and geothermal energy are concentrated in the upper parts of the earth's crust. The average content of a chemical element in the earth's crust is called the clarke of this substance. More than 99% of the mass of the earth's crust consists of clarkes of eight elements:

oxygen - 47%;

silicon - 29.6;

aluminum - 8.1;

iron - 4.7;

calcium - 3;

sodium - 2.5;

potassium - 2.5;

magnesium - 1.9%;

The main method for the rational use of minerals as sources of raw materials and energy is the improvement of mining methods in order to increase the coefficient of their extraction from the subsoil during the development of deposits, to reduce waste during the extraction of minerals, in the process of enrichment and processing, in order to fully use all useful components.

It is necessary to constantly improve production technology - methods and ways of converting resources into necessary products, to replace natural materials with synthetic ones.

Expansion of geological exploration works in order to create potential reserves of mineral raw materials is of great importance. When developing minerals, it is necessary to observe a set of measures aimed at protecting such components of the natural environment adjacent to mining enterprises as soil, vegetation, relief, age composition of the atmosphere. To improve the processes of extraction and use of minerals in the direction of more complete compliance with the requirements of environmental protection and greening production.

Every year, 100 billion tons of minerals are extracted from the bowels of the earth, including fuel, of which 90 billion tons are turned into waste. Thus, conserving resources and reducing environmental pollution are two sides of the same coin.

Mineral resources on the planet are limited and rapidly depleting. Various types of resources can be depleted in the next 30-50 years. Perhaps, in the next 20-30 years, the reserves of lead and zinc ores, tin, gold, silver, platinum, asbestos will be exhausted, and then the extraction of nickel, cobalt, aluminum and others will stop. Stocks of phosphorus raw materials are being depleted before our eyes.

How can this process of resource depletion be stopped or slowed down?

The only possibility is to simulate the biospheric circulation of substances in industry. It is necessary that useful elements contained in raw materials do not end up in landfills, but be reused. In this case, production and consumption waste is no longer waste, but secondary material resources.

Dmitry Ivanovich Mendeleev said: "There is no waste in chemistry, but only unused raw materials."

Serious attention should be paid to the analysis of indicators of the rational use of subsoil, as well as production waste, since the share of mineral raw materials in the total balance of used natural raw materials in our country is 75-80%.

Rational use of mineral raw materials involves solving the following practical problems:

1) involvement of poor ores in economic circulation and reduction of losses during the extraction and processing of minerals;

2) complex use of mineral raw materials;

3) processing of secondary raw materials;

4) trapping gases "were burned by raw material processing plants.

As a result, this will make it possible to solve two important tasks at once - to prevent the depletion of natural resources and to reduce the level of environmental pollution (and, consequently, the costs of its protection), since production wastes that poison the biosphere in the overwhelming majority of cases are nothing more than irrationally used natural (mainly mineral) resources. In addition, the widespread use of treatment facilities exacerbates the problem of disposal of substances that have entered the process of cleaning harmful emissions and discharges.

Protection and rational use of mineral resources includes measures to improve:

1) Systems and methods for the development of mineral deposits

2) Backfilling of worked-out areas

3) Ore dressing schemes

4) Use of metallurgical waste

5) Increase in the extraction of accompanying valuable components from ores

If we continue to use mineral resources inappropriately, then even while protecting air and water basins from pollution, we will continue to litter and poison large areas of land.

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