IMPACT OF MINING ENTERPRISES ON THE REGIONAL ECOSYSTEM

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Annotation

The specific impact of a particular mining enterprise on the environment is determined by the geological and geochemical characteristics of the deposits and the equipment and technology used for its development. The article discusses an example of analyzing the content of environmental measures and the main directions of environmental activities of a mining enterprise, and also determines the eco-efficiency of the environmental policy being pursued.

The mining industry is characterized by an intense impact on the natural environment, which inevitably causes its change. During the production process, the established ecological conditions in the areas where industrial facilities are located (mines, mines, processing plants) are completely or partially violated.

These changes are manifested in various combinations of negative phenomena, the most important of which are the alienation of territories needed for agriculture for mining, depletion and pollution of ground and surface waters, flooding and swamping of mined areas, dehydration and salinization of soils, pollution by harmful substances and chemical elements of the atmosphere. air unfavorable for local ecological systems, hydrogeological and geochemical changes, changes in microclimate.

The damage caused to the environment by mining is also aggravated by the variety of negative factors generated by other industries developing in the same area, urban development, transport communications, etc.

The main factor in the transformation of the environment is technogenic processes that are formed during the operation of various mining facilities.

The main areas of impact of mining enterprises on the environment are:

• withdrawal of mineral raw materials (fuel and energy resources, non-ferrous and ferrous metals, mining and chemical raw materials, hydromineral resources) and environmental resources (land, water, air, flora, fauna);

• chemical and thermal pollution of the biosphere;

• physical impact (acoustic, electromagnetic, radioactive).

These impacts may be:

• global;

• local - manifested in a zone with a radius from 15 to 70-100 km;

• regional - covering vast territories at a distance of up to 1000-1500 km.

The nature of the release of pollutants into the atmosphere, water bodies, and soil is determined by:

• maximum one-time release and discharge;

• annual emissions, discharge of pollutants.

The scale of extraction of solid minerals from the subsoil depends on the mining technology, which can be either open-pit or underground. Mining operations, depending on the technology, cause significant changes in the environment, such as disruption of the surface over mined-out areas of deposits and the formation of rock dumps and off-balance ore dumps in the mining area.

The most severe disturbances of the earth's surface are observed during the extraction of mineral resources from the subsurface by open-pit mining; large territories are allocated for the development of deposits, which in most cases, after completion of the work, are excluded from local ecological systems. Subsequently, the “wasted” territories become centers of erosion processes, involving more and more new areas of land, while changing the landscape of the area.

When the quality of the environment changes, the mining enterprise ultimately affects:

• personnel of an industrial enterprise;

• population (living conditions and health);

• the natural environment of the region;

• industrial facilities;

The scale of the impact of a mining enterprise on the regional ecosystem is characterized by a quantitative assessment of the objects of impact.

The level of this impact is determined based on:

• calculations of the dispersion of pollutants in the atmosphere;

• calculation of emissions and discharges of pollutants into the atmosphere and water bodies;

• calculating the level of physical impacts outside the sanitary protection zone and in populated areas;

• calculation of water consumption, water balance of the adjacent zone.

When assessing the quality of the natural environment and its transformation as a result of technogenic impact, the following main characteristics are considered:

• quality of water - drinking, domestic, technical;

• characteristics of the main watercourse used as a source of water supply for economic purposes, which is a significant landscape object;

• air quality;

• condition of the soil, swamps;

• climatic features of the area;

A comprehensive assessment of the consequences of the functioning of mining enterprises in the region is given on the basis of a system of indicators characterizing:

• changes in human living conditions;

• the possibility of degradation of the natural environment due to a violation of the stability of the ecosystem;

• changes in regional socio-economic indicators.

The specific impact of a particular mining enterprise on the environment is determined by the geological and geochemical characteristics of the deposits and the equipment and technology used for its development. Geological and geochemical features are expressed by differences in the associations of chemical elements of specific mineral deposits. The distribution of pollutants in technological chains is associated with the technology of mining and mineral processing.

Technogenic changes in the environment during the development of mineral deposits, especially if it is carried out for a long time, covers large areas, in area incomparable with the areas of mining allotments.

Thus, in the cumulative manifestation of a large complex of technogenic processes in the area of mining enterprises, the technogenesis of the mountain profile is formed, as a result of the intense impact of which the upper part of the lithosphere and the environment as a whole are transformed.