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«Analyzing effects of dust from mining enterprises on the environment»

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Problem statement

• Mining sector has high degree of negative impact on the environment. Water resources, atmospheric air, fertile lands, subsoil, and also the biosphere in the form of fauna and flora are to subject to destructive influence.

• But the most common issue is the atmospheric pollution by dust.

• The purpose of this work is to assess the dust load on the environment during the operation of mining enterprises.
• We proposed one of the methods for analyzing this impact by conducting a comprehensive assessment of the dust load on the environment.

• The assessment procedure consists of the determination of the causes and sources of dust emissions, which we carried out earlier, followed by the identification of areas of dust distribution during mining and zoning.

• The next step is the actual procedure for assessing the dust load using several methods. The use of such a complex comprehensive assessment of the dust load on the environment will allow for taking into account many different indicators, which will ultimately reflect the full picture of the atmospheric pollution by dust emissions.

Figure 1. Chart ranking mining enterprises by area of dust distribution with a concentration exceeding MAC, m².

Figure 2. Comparative chart of the allowable work period in the presence of dust fraction for the main labor occupations, years.
Conclusions

The state of human health is directly dependent on the state of the environment. These problems are especially acute in the areas with the developing mining industry. It is these areas that have territories most unfavorable in terms of the environment, as well as increased morbidity of the population. A comparative analysis of the studied parameters showed that all the medical indicators used were higher than those for the Russian Federation as a whole and for the Irkutsk Region in particular.

- Dust pollution is catastrophic and has a negative impact not only through pollution of the atmospheric air by dust particles, but also of nearby territories, polluting water and land resources, disrupting the natural processes of flora and fauna, causing irreversible effects on human health.
- An important role in reducing the dust load is played by appropriate measures aimed at solving the problems of dust formation at mining enterprises, such as moistening of the rock mass, roads and massifs, anti-erosion measures and various methods of mining operations.
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