

Use of environmentally friendly technologies in railway transport



Railway transport



It is more environmentally friendly than others, emits 20 times less harmful substances into the atmosphere than automobile transport and 640 times less than air transport. But when laying railways, a strip of land with a width of 30-45 m is alienated, on which various works are carried out

Application of resource-saving technologies in railway transport infrastructure


The complex of measures provides for the commissioning of heat supply systems for railway facilities based on resource-saving technologies, effective systems for the consecration of industrial premises, platforms, stations, railway stations, railway bridges using LED technology, the use of environmental materials



Negative environmental consequences of work during the construction of railway lines :

The change in landscape, destruction of growing, harvesting of agricultural land. The violation of the hydrogeological conditions. Dust pollution, creating conditions for erosion. u Water erosion. Destruction of the fertile soil layer, u littering of Territories. u Discharge of polluted water.





Sources and types of pollution of the natural environment by rail

The length of the railways is 158 thousand kilometers. Despite the fact that rail transport has the least impact, especially compared to road transport, its share in environmental pollution remains high. This occurs as a result of the release of harmful substances, both rolling stock and numerous production and auxiliary enterprises that serve the transportation process. At the same time, there is a significant pollution of atmospheric air, water and soil. In addition, railway transport creates noise, heat pollution, and the presence of radiation from the human environment.



Sources of atmospheric air pollution

In railway transport, the sources of emissions of harmful substances into the atmosphere are the objects of production enterprises and rolling stock. They are divided into stationary and mobile. From stationary sources, the greatest harm to the environment is caused by boiler houses, depending on the fuel used, different amounts of harmful substances are released during its combustion. When solid fuel is burned, oxides of sulfur, carbon, nitrogen, fly ash, and soot are released into the atmosphere. Fuel oil during combustion in boiler units is released with flue gases, sulfur oxides, nitrogen dioxide, solid products of incomplete combustion of vanadium. The preparation of dry sand for locomotives in the depot, its transportation and loading into locomotives is accompanied by the release of dust and gaseous substances into the air environment. Application of paint and varnish materials

the coating is accompanied by the release of solvent vapors and paint aerosol into the atmosphere. When using solvents, putties, primers, lacquers, enamels, the vapors entering the air contain acetone, benzene, xylene, butyl alcohol, toluene, whitespirit, formaldehyde in concentrations from 10 to 150 mg/m³ When washing the rolling stock, dust up to 1.5 – 20 mg/m³ will be released into the air, sodium carbonate-up to 1.0-5.0 mg/m³. Track equipment, diesel locomotives when burning fuel with exhaust gases isolated (sulfur oxide, carbon, nitrogen, aldehydes).





Sources of water pollution

Water is used in many technological processes of the railway economy. In order to save this valuable natural resource, water consumption and drainage standards have been developed. After use in enterprises, the water is polluted with various impurities and passes into the category of industrial wastewater. Many substances that pollute the effluents of enterprises are toxic to the natural environment. The qualitative and quantitative composition of wastewater, as well as its consumption, depend on the nature of the technological processes of the enterprise. Industrial waste water of the locomotive depot is formed in the process of external washing of rolling stock, during washing, batteries, washing of workwear. Wastewater contains, petroleum products, bacterial contamination, acids, alkalis, (surfactants).

RECOMMENDATIONS

Carry out afforestation along the railway. Consider possible options for the most effective use of felling residues. Land under temporary structures should be reclaimed upon completion of construction. Dispose of sleepers in a timely manner after the railway track is repaired.





Thanks for your attention

