

ECOLOGY OF RAILWAY TRANSPORT



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- Rail transport is one of the most environmentally friendly modes of transport. On the basis of Article 67 of the Law " On Environmental Protection " No. 7 FZ of 10.01.2002, industrial control over the release of pollutants into the atmospheric air, the discharge of harmful substances into water bodies, and the formation of toxic waste at railway transport enterprises must be carried out at enterprises.
- The main activities for the protection and rational use of water resources are to reduce the consumption of drinking water for production needs; reduce the discharge of polluted wastewater from existing local and nodal treatment facilities, transfer wastewater from railway enterprises to territorial sewerage systems, use less water-intensive technological processes, introduction of recycled and re-water supply systems, reduction of water leaks and losses .
- Of primary importance are measures to preserve forest stands; maintain forests in proper condition and improve the protective, sanitary, health and other natural properties of forests; protect forests from fires, diseases and pests; and restore forests ahead of time.

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- Further electrification of railways, i.e. the replacement of diesel locomotives with electric locomotives, eliminates air pollution from the exhaust gases of diesel engines. The main way to reduce the emissions of toxic substances by diesel locomotives is to reduce their formation in the engine cylinders. The disposal of exhaust gases and the proper operation of diesel locomotives are of great importance

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- To protect the natural environment, it is necessary, along with limiting smoke, to fight sparks, the sources of which are the exhaust devices of diesel locomotives, as well as cast-iron brake pads of locomotives and wagons. Sparks can cause fires in areas adjacent to railways. It is possible to limit the spark release from the exhaust devices that indicate incomplete combustion of fuel by implementing measures aimed at improving the thermal condition of locomotives, as well as installing spark arresters. The use of brake pads made of synthetic and composite materials eliminates sparking .
- To protect against noise in the design of railways, it is necessary to provide bypass lines in cities for passing transit freight trains without entering the city, to place marshalling yards outside the settlements, and technical stations and parks of reserve rolling stock - outside the residential territory. Railway lines for freight transport and access roads must pass outside this territory.

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- In order to fulfill the main environmental obligations, Russian Railways is implementing the investment project "Ensuring Environmental Safety", which includes the construction and reconstruction of treatment facilities, the purchase of installations and equipment for environmental protection purposes, the equipping of environmental laboratories, and the purchase of equipment for the elimination of emergency oil spills. In 2009, RUB 322.6 million of capital investments were spent for this purpose. In the framework of the project "Ensuring environmental safety" in 2009, constructed, reconstructed and commissioned 9 environmental objects; implemented 3 units for the purification of emissions of harmful substances into the atmosphere, the purification of waste water; set: 4 mobile environmental laboratory on the basis of the car "Gazelle", 29 sets of analytical instruments and laboratory equipment and 24 instrument for environmental control of emissions from locomotives, acquired more than 160 technical means for the elimination of emergency oil spills.
- The technical re-equipment of JSC "Russian Railways", carried out for the replacement of rolling stock, reconstruction of infrastructure, reduces the man-made impact on the environment. During the overhaul of diesel locomotives, outdated engines are replaced with modern, more environmentally friendly engines of domestic production, which increase the fuel efficiency of the repaired locomotives by 15%, improve environmental performance by 30%. Every year, new protective forest stands are created in the railway right-of-way. During major repairs of the track, wooden sleepers impregnated with antiseptics are replaced with environmentally friendly reinforced concrete sleepers. Since 2001, work has been underway to equip passenger rolling stock with environmentally friendly closed toilets with collection tanks (ECTS), which exclude bacterial contamination of the railway track and adjacent territories.
- Within the framework of the resource saving program, the following projects are being implemented: electrification of railways; reconstruction and construction of technological and municipal facilities, including the renovation of stationary heat power, water supply and sanitation facilities. The technical means and technologies implemented under the Resource-saving Program allow to reduce fuel consumption in traction and stationary power engineering.

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- In addition, JSC "Russian Railways" is actively working on the introduction of new economical, environmentally friendly heating systems: gas infrared emitters, infrared electric heating systems, heat pumps, and other environmentally friendly technical means for heating rooms.
- The balance in the natural environment is ensured by the maintenance of energy, water, biological, and biogeochemical balances and their changes in a certain period of time. It is possible to ensure the balance in nature with the help of legal, socio-economic, organizational, technical, sanitary-hygienic, biological and other methods. Legal methods regulate the norms and order of nature management based on the condition of maintaining a relative balance in the environment. Social methods are based on the responsibility of all segments of society for the state of environmental protection. Economic methods provide for certain types of costs for maintaining the balance of the environment, rational payment for resources, and compensation for damage. Organizational methods are based on the scientific organization of nature management and the implementation of administrative and law enforcement measures to prevent harmful effects on the environment. Technical methods are based on the creation of new technologies and production equipment that reduce the harmful impact on the natural environment, the introduction of effective means of cleaning emissions into the atmosphere and discharges into reservoirs.