



Ways to Reduce Harmful Emissions from Vehicles

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Abstract: This article examines the impact of vehicles on the environment, as well as identifies the causes of air pollution in vehicles. Measures are proposed to help reduce emissions of harmful substances that pollute the atmospheric air.

Keywords: vehicles, environmental protection, carbon monoxide, aldehydes, soot, nitrogen oxides.

At present, the automotive industry of the Republic of Uzbekistan occupies one of the leading places in the economy. This industry employs a significant number of the country's population. Up to 250 thousand cars are produced annually, (after several years of falling production in 2019, car production reached 270 thousand units). The automobile industry of Uzbekistan occupies the 28th-37th place among the countries producing vehicles and, according to this indicator, is in second place after the Russian automobile industry in the post-Soviet space and in first place among the countries of Central Asia [1].

Uzbekistan has been a member of the International Organization of Motor Vehicle Manufacturers (OICA) since 1998. In the transport industry of Uzbekistan, there are about 400 motor transport enterprises engaged in freight transportation. With the development of market relations, the number of small and medium-sized motor transport enterprises with a small fleet of vehicles has increased.

A significant part of the vehicles do not comply with international Euro-4 standards for permissible axle load and environmental restrictions, and, as a result, are not allowed to work in Europe. All of them are used mainly for the transportation of goods to Russia and other CIS countries.

The vast majority of trucks are privately owned. Objectively available cars in Uzbekistan today are not able to compete in the international market, and its operators cannot compete with operators from Iran, Turkey, Kazakhstan and Russia. As a result, most Uzbek cars are used to transport goods (for example, cotton, building materials, consumer goods and agricultural products) within the country [2].

Road transport accounts for about 10% of foreign trade and 88% of domestic passenger and freight traffic. The annual growth rate of the volume of road transport services is 20%.

Poor road conditions not only increase overall transport costs by 20-30%, but also shorten the life of vehicles. Therefore, the restoration of the national road network has become one of the main priorities of Uzbekistan.

As of January 2022, the length of public roads in the Republic of Uzbekistan is 42,869 kilometers, including 42,299 kilometers of paved roads (98,7% of the total length).

In terms of territories, the largest share of public roads falls on Navoi (4666,5 kilometers or 10,5% of the total length), Tashkent (4422,3 kilometers or 9,9%), Ferghana (4160,8 kilometers or 9,4%) of the region and the Republic of Karakalpakstan (4262,1 kilometers or 9,6%) of the region.



According to the State Statistics Committee, as of January 2022, the length of public roads in the Republic of Uzbekistan amounted to 42,9 thousand km.

The length of public roads in the CIS countries as of January 1, 2022: Russia – 1566,1 thousand km; Belarus – 103,4 thousand km; Kazakhstan – 95,4 thousand km; Uzbekistan – 42,9 thousand km; Azerbaijan – 28,7 thousand km; Moldova – 9,5 thousand km; Armenia – 7,5 thousand km.

Thus, Uzbekistan ranks 4th among the CIS countries in terms of the length of public roads [3].

Road transport emits 200 pollutants into the air, including carbon monoxide, aldehydes, soot, nitrogen oxides. Accumulating in the surface layer (human breathing zone), these substances react under the action of ultraviolet rays, becoming the starting products for the formation of new, sometimes even more toxic compounds.

Currently, there are about 4 million vehicles in Uzbekistan, of which 100000 are out of order. Of these, 44% run on gasoline, 12% on diesel fuel, 43% on gas fuel. Over 91% of greenhouse gas emissions from transport are accounted for by motor vehicles [2].

These vehicles emit an average of 1,3 million tons of harmful substances per year, which is 63% of the total emissions. In Tashkent, this figure reaches 88%.

On the scale of Uzbekistan, the total amount of emissions is over 2 million tons, of which 60% is accounted for by road transport, which is more than 3 times higher than the standards established in developed and developing countries [3].

As a result of the daily increase in the number of vehicles, emissions in 2022 increased by 26 thousand tons compared to the previous year. Such an increase in emissions is due to several factors, the quality of fuel, the insufficient use of public transport by the population, the use of their own car, the inattention of car owners to the technical parameters of their vehicle.

As of January 1, 2023, the number of private cars in Tashkent was 562,1 thousand units.

According to the Tashkent City Department of Ecology and Environmental Protection, the volume of pollutant emissions into the atmospheric air in the city of Tashkent last year amounted to about 426000 tons. At the same time, the share of road transport accounted for 395 thousand tons, or more than 90% of emissions.

About 75% of cars registered in the capital run on petrol and diesel engines, and 25% run on gas (excluding electric vehicles). When working on diesel fuel, 208 kg of pollutants are emitted from one ton of fuel, when working on gas - 3 times less.

The level of air pollution in cities is measured by the Air Pollution Index (API). API values less than 5 points correspond to a reduced level of pollution. The API is calculated by comparing the observed concentrations of pollutants with their maximum allowable concentrations (MPC), values above 1,0 potentially hazardous to public health.

Over the past 10 years, the level of air pollution in all cities of Uzbekistan has decreased. The lowest values of ISA-1,10 - 2,63 are typical for such cities as Denau, Kokand, Gulistan, Samarkand, Sariosiya. Higher API values – 4,30 - 5,30 are observed in Almalyk, Angren, Bukhara. In other cities, the API is in the range of 3,20 - 3,97. Since 2006, the indicators of the INI in the city of Tashkent fluctuated at the level of 3,32 - 4,96 points.

According to the Tashkent City Department of Ecology and Environmental Protection, in the first quarter of 2019, the MPC for nitrogen dioxide in the capital was 0,8, sulfur dioxide - 0 (0,6), ammonia – 3,0 (2,3), nitrogen oxide – 0,2 (0,29), dust – 0,7 (0,96), carbon monoxide – 0,7 (0,65), hydrogen fluoride – 0,6 (0,58), formaldehyde – 0,016 (0,024) [4].



According to Uzhydromet measurements, over the past 10 years, Tashkent has been characterized by background pollution with dust, which exceeds the average daily MPC by 1,3-2,7 times, and by nitrogen dioxide by 1,3-2 times.

To reduce the number of harmful emissions, the country's authorities are taking the following measures:

annually, according to the program of the month "Clean Air", in all road patrol points of the republic on the central streets, special equipment will carry out environmental control of the number of harmful substances emitted into the atmosphere by motor vehicles running on gasoline, diesel fuel, compressed natural and liquefied gas;

increase the number of electric vehicles for personal use of citizens;

increase the number of buses and electric buses, which will serve to reduce emissions of toxic substances into the air, as these types of public transport are considered environmentally friendly. As a result, the number of toxic gases emitted into the atmospheric air is reduced by an average of 1,2 thousand tons per year.

References / Список литературы

1. https://ru.wikipedia.org/wiki/Automotive_industry_Uzbekistan. (the date of treatment: 09.05.2023).
2. Road transport - main pollutant environment. International Scientific Review of the Problems and Prospects of Modern Science and Education / Collection of Scientific Articles: LXXXI International Scientific and Practical Conference (USA, Boston. May 23, 2021). Boston, 2021. –P.5-7.
3. Overview of the state of transport logistics in Uzbekistan [Obzor sostoyaniya transportnoj logistiki v Uzbekistane]. <https://www.referat911.ru/Logistika/obzor-sostoyaniya-transportnoj-logistiki-v/325055-2719429-place2.html> (the date of treatment: 09.05.2023).
4. <https://uzdaily.uz/ru/post/74421>(the date of treatment: 09.05.2023).