Impact of vehicles passing through the streets of Kokan on the environment. (Experimental technique on CO2 concentration)

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This article is aimed at studying the impact of toxic substances emitted from vehicles moving on the streets on the atmosphere. The number and types of vehicles were determined at the intersection of A 373 and A 376 (Turon Street) of the city of Kokan, and experimental results were obtained on the extent to which exhaust gases from the exhaust gases affect the atmosphere and human health.

Keywords: Motor transport, toxic substances, Kokan city, atmosphere.

Introduction: A strong source of environmental pollution is road traffic. Gases released from vehicles in Kokan city contain an average of 4-5% CO, as well as unsaturated hydrocarbons, lead compounds and other harmful compounds. Pollution of the environment with toxic components of waste gases causes great economic losses in the economy, because toxic substances disrupt the growth of plants, reduce their quality, and also have a negative effect on the health of living organisms.[1]

As in every country, production and entrepreneurship are growing in our country, which in turn increases the demand for vehicles. The more vehicles there are, the more the remains of the exhaust gases coming out of them, whether we like it or not, get into the air we live in, which will not leave its complications without having a negative impact on our health, knowing that many countries, including our country, are taking various measures to reduce the toxicity of waste by better refining gasoline, replacing it with clean energy sources (gas fuel, ethanol, electricity), reducing lead in gasoline additives. More fuel-efficient engines are being designed, urban areas with restricted traffic and car engines are switching to natural gas, etc. Despite the measures taken, the number of cars increases year by year, and air pollution does not remain unaffected.[2]

Exhaust gases of internal combustion engines contain about 200 components. Yu. Yakubovsky (1979) and E.I. Pavlova (2000) reported the average composition of exhaust gases from spark-ignition and diesel engines as follows: nitrogen 74 - 74 and 76 - 48%, O2 0.3 - 0.8 and 2.0 - 18%, water vapor 3.0 - 5.6 and 0.5 - 4.0%, CO2 5.0 - 12.0 and 1.0 - 1.0%, nitric oxide 0 - 0.8 and 0.002 - 0.55%, hydrocarbons 0, 2 - 3.0 and 0.009 - 0.5%, aldehydes 0 - 0.02ot and 0.0001 - 0.0001% and. - 1.0 g / m2, benz (a) pyrene 10 - 20 and up to 10 μg / m3.[3]

We formed a group of 3-4 people in order to assess the workload and study the environment on A 373 and A 376 (Turon Street), where the streets of Kokan city are equipped with different types of vehicles.

A group of 3-4 people (one counts, the

other writes, the rest give a general assessment of the situation). They were placed in certain parts of the two-way street, each group standing on its own side. Traffic intensity is determined by counting vehicles of different types 3 times, but in each period of 60 minutes, 12 hours. Accounting is done by plotting the dependence of the number of vehicles N, (en) on the observation time t. (min). Recording is carried out according to Table 1.

Table 1 - Results of observations

Time (60 minutes)	Vehicle type	Number of units
	Light load	1344
	Medium load	587
	Heavy duty (diesel)	414
	Bus	672
Total		3017

Please note that if so many vehicles pass by for 60 minutes, we will consider the residuals of some exhaust gases (by CO concentration) in the formula.

The formula for estimating carbon dioxide concentration (K.J. Betma et al. 1984. Shapovalov. 1990):

KSO = (0.5 + 0.01N * CT)

where: 0.5 non-transport air pollution, mg/m3.

N - the total intensity of traffic on the city road, cars / hour.

KT - the coefficient of toxicity of CO emitted depending on the type of cars[4]

Table 2
Value of K_T coefficient

Vehicle type	K_T coefficient mg\m3
Passenger car	67.7
Medium load	35.54
Heavy load (diesel)	50.18
Bus	54.26
Total	207.68mg/m3

An experiment was conducted at the intersection of A 373 and A 376 in the city of Kokan, and as a result, 207.68 mg/m3 passed in 60 minutes, and 4984.32 mg/m 3 in 24 hours, i.e. 1 day. we can say that the gas comes out at the intersection of these streets. Now, if we convert mg/m3 to kg, it will be 0.00498432, and if we consider this time in one year, 1.8193 kg of CO will be released into the atmosphere.

There are more than 200 toxic substances in addition to the CO2 concentration you see. If we multiply the results of CO2 concentration by this number, more than 363.86 kg of waste will be produced. In the city of Kokan, there are more than 20 such monitoring points, while approximately as much waste gas is emitted from one monitoring point.

According to the conclusion of ecologists, a total of 924 thousand tons of harmful substances were released into the atmosphere in Uzbekistan in 2020.

The most ecologically damaged regions were Tashkent and Kashkadarya. In these areas, 60% of air pollutants were released into the atmosphere.

The most ecologically clean regions were Khorezim, Surkhandarya and Jizzakh. [5]

Such a sharp difference in numbers depends on the level of economic development of the regions. Traditionally, there are many production enterprises in Tashkent region, that's why many harmful substances were released into the atmosphere.

The amount of harmful substances released into the atmosphere by regions:

- Tashkent region - 430 thousand tons;
- Kashkadarya regions - 128.1 thousand tons;

- Syrdarya region - 71.8 thousand tons;
- Samarkand region - 52.7 thousand tons;
- Fergana region - 50.5 thousand tons;
- Navoi region - 48.4 thousand tons;
- Bukhara region - 37.1 thousand tons;
- Tashkent city - 33.7 thousand tons;
- Republic of Karakalpakstan - 28.9 thousand tons;
- Namangan region - 15 thousand tons;
- Andijan region - 11.5 thousand tons;
- Khorezim region - 6.8 thousand tons;
- Surkhandarya region - 6.5 thousand tons;
- Jizzakh region made 3.4 thousand tons.[6]

It follows from these indicators that Tashkent, Kashkadarya, Syrdarya, Samarkand and Fergana regions occupy the top 5 of harmful substances released into the atmosphere.

According to the results of our observation, 68% of the indicator of Fergana region corresponds to the city of Kokan.

The main measures to combat air pollution are as follows: strict control of the release of harmful substances. It is necessary to replace toxic primary products with non-toxic ones, switch to closed cycles, improve gas cleaning and dust collection methods. Take measures to reduce transport emissions.

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