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ECOLOGICAL AWARENESS AGAINST VEHICLE EMISSIONS: PROBLEMS AND SOLUTIONS

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Abstract: This article primarily focuses on reducing the number of vehicles that increasingly impact the environment and promoting the use of transportation with a lower environmental impact. These processes mainly serve to advance the level of technological revolution. The broad impact on the environment contributes to the continuous rise of global temperatures. The increasing effects of toxic emissions on humans and the emergence of various pandemic-related viral diseases are also discussed. The article emphasizes the use of electrical energy as the main fuel to protect the environment from harmful gases, i.e., the adoption of electric vehicles. It also covers the reconstruction of old types of transportation and strategic plans to impose taxes on vehicles that produce high amounts of toxic emissions.

Keywords: revolution, reconstruction, diversification, global warming, electric vehicle, pandemic, toxic gases, diesel fuel.

Annotatsiya: Ushbu maqolada asosan atrof muhitga ta'sir miqdori oshib borayotgan transportlar miqdorini kamaytirish va atrof muhitga ta'sir darajasi kam bo'lgan transportlarni ommaga tatbiq etish. Asosan bu jarayon revolutsiya miqdorini oshirishga xizmat qiladi. Atrof muhitga keng ko'lamli tasiri yani global iqlim haroratining yuqori darajada uzluksiz issib borishiga xizmat qilayotgani. Zaharli tutunlarning insoniyatga tasiri ortib borishi va turli xil pandemik virusli kasalliklarning paydo bo'lishi. Asosiy yoqilg'i sifatida elektr energiyasidan foydalanish evaziga atrof muhitni zaharli gazlardan asrash yani elektra mobillardan foydalanish. Eski turdagi transportlarni rekonstruksiya qilish. Zaharli tutun miqdorini yuqori chiqadigan avtomobillardan soliq olish haqida strategik rejalar muhokama qilinadi.

Kalit so'zlar:revolutsiya, rekonstruksiyalash, divertifikatsiya, global isish, elektramobil, pandemiya, zaharli gazlar, dizel yoqilg'i.

Аннотация:В данной статье основное внимание уделено уменьшению количества транспортных средств, оказывающих негативное воздействие на окружающую среду, а также внедрению экологически безопасных видов транспорта. Эти процессы направлены на повышение уровня технологической революции. Широкомасштабное влияние на окружающую среду приводит к непрерывному повышению глобальной температуры. Усиление воздействия токсичных выхлопов на организм человека способствует возникновению различных пандемических вирусных заболеваний. Использование электрической энергии в качестве основного топлива позволяет снизить выбросы вредных газов, то есть расширить применение электромобилей. Также

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рассматривается реконструкция устаревших видов транспорта и обсуждаются стратегические планы по введению налогов на автомобили с высоким уровнем токсичных выбросов.
Ключевые слова: революция, реконструкция, диверсификация, глобальное потепление, электромобиль, пандемия, вредные газы, дизельное топливо.

Today, the world is developing at an unprecedented pace. Every minute, new technologies are being created, and vehicles are advancing toward the highest point of development. Undoubtedly, they have become an inseparable and essential part of human life. However, while these vehicles provide convenience, they also cause tremendous and often unforeseen harm to the environment. For example, they release carbon dioxide (CO2), nitrogen oxides (NOx), sulfur compounds, and other harmful substances into the air. These gases significantly affect not only human health but also the atmosphere. If we reflect on the COVID-19 pandemic, people significantly reduced their use of vehicles, and many factories and enterprises temporarily halted their activities. As a result, during that period, fewer waste gases were released into the atmosphere, and the air quality improved.

Thus, although cars create convenience for humanity in the current era of development, we observe that their negative impact on the environment continues to increase.

"Table 1: Emissions from Vehicles and Associated Diseases"

Types of Toxic Gases	Main Source of Gas	Effects on Human Health (Diseases)
CO_2 – Carbon Dioxide	**Combustion of Fuel (Petrol, Diesel)**	**Not directly toxic, but contributes to global warming, climate change—heat waves, increased allergies, and respiratory problems.**
CO – Carbon Monoxide (Carbonous Gas)	**When fuel does not burn completely**	**Headache, suffocation, shortness of breath, loss of consciousness; in severe cases, it can lead to death.**
NOx – Nitrogen Oxides (NO, NO_2)	**Diesel and Petrol Engines**	**Bronchitis, asthma, cardiovascular diseases, respiratory tract inflammation, lung damage.**
SO_2 – Sulfur Dioxide	**Low-quality fuel, old diesel**	**Eye irritation, lung diseases,**

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	engines	**asthma attacks, acute respiratory problems.**
CH_4 – Methane (Hydrocarbons)	**Incomplete Combustion of Fuel**	**Pollutes the air, reduces lung function, causes allergies and dizziness.**
VOC – Volatile Organic Compounds	**Evaporation of Petrol, Engine Emissions**	**Increases the risk of cancer, causes headache, nausea, and irritation of the eyes and throat.**
PM2.5/PM10 – Dust and Fine Particles	**Diesel Smoke, Old Engines**	**Lung cancer, acute asthma, respiratory failure, heart attack, increased blood pressure**
Benzo[a]pyrene (PAH)	**Diesel Combustion**	**Strong carcinogen – can cause cancer. Skin and respiratory diseases.**

Causes and Consequences of Toxic Gases Emitted by Vehicles

Currently, vehicles use petrol and diesel fuels. It is evident that when these fuels do not burn completely, they turn into carbon monoxide, hydrocarbons, and other harmful substances. In addition, a large amount of smoke and gases are released from very old vehicles.

People exposed to toxic gases can develop various diseases, such as respiratory tract issues, allergies, and cardiovascular diseases. Moreover, these gases accumulate in the atmosphere, contributing to global warming. This, in turn, leads to droughts, water shortages, and ecological disasters.

Ways to Reduce Toxic Gases and Possible Solutions

To reduce the release of harmful gases from vehicles, comprehensive measures must be developed:

Regular technical inspections of vehicles.

Use of high-quality fuels.

Widespread adoption of electric vehicles.

Development of proper infrastructure for electric vehicles.

Increased use of public transport (metro, trolleybus, tram, etc.).

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Use of alternative individual transport (bicycles, scooters, electric scooters).

Additionally, it is important to regularly maintain engines, ensure proper tire pressure, and replace air filters on time. These measures help reduce fuel consumption and the emission of harmful substances.

Using high-quality fuels for vehicles, such as CNG (Compressed Natural Gas – methane), is one of the cleanest natural fuels, with CO_2 emissions reduced by 20–30%, and it is affordable. LPG (Liquefied Petroleum Gas – propane/butane) is similar to petrol but burns cleanly.

Using electric vehicles eliminates fuel consumption and does not harm the air. Their engines are mechanical-free, making them quiet. Electricity costs are 3–4 times cheaper than petrol, so the cost per 100 km is very low.

Establishing charging stations for electric vehicles, providing home charging devices (every household should have one), public stations (installed in parking lots, shopping centers, and along roads), fast-charging stations (charging in 10–15 minutes, installed on highways and in large cities), ensuring strong electricity supply, recycling old batteries, building recycling plants, training specialists for electric vehicle maintenance, and granting customs benefits for electric vehicle imports.

Increasing the use of public transport by expanding routes, making fares affordable, providing discounts for students, pensioners, and people with disabilities, increasing the number of stations, showing the benefits of public transport, and ensuring that transport vehicles are clean and safe.

For individual transport, the primary focus should be on developing infrastructure (new roads, parking lots, service centers).

Currently, it is estimated that there are over 1.6 billion motor vehicles in the world, which emit approximately 613 million tons of CO_2 per month. This refers only to carbon dioxide; if other gases are included, the total amount of toxic gases would be even higher. According to the US Environmental Protection Agency (EPA), an average car emits about 4.6 tons of CO_2 per year, in addition to:

20–40 kg of nitrogen oxides (NOx)

200–300 kg of carbon monoxide (CO)

30–50 kg of hydrocarbons (CH_4, VOCs)

According to scientists' estimates, the emission of 1 ton of CO_2 causes approximately $190 (around 2 million UZS) in environmental damage. Multiplying $190 by 4.6 tons of CO_2 equals

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$874 (around 10.5 million UZS). This represents the annual environmental damage caused by a single car. Such a fine should be imposed on every vehicle that does not use electric energy.

Additionally, $874 per year is a significant amount for the population of Uzbekistan, so it is recommended to set the fine at 4–5 times the average base calculation for residents.

Conclusion:

From the above information, it can be concluded that it is necessary to raise people's environmental awareness and try to minimize the harm caused by vehicles to nature. Measures to prevent air pollution should start with ourselves, with every individual making maximum efforts, and the ecological class of vehicles should be developed. Fines should be imposed on all transport and enterprises that pollute the environment according to the amount of toxic gases they emit, and if fines are ineffective, alternative measures should be implemented.

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