TOSHKENT TIBBIYOT AKADEMIYASI URGANCH FILIALI
JANUBIY OROLBO'YI TIBBIYOT JURNALI
1-TOM, 3-SON. 2025
14.00.00 - TIBBIYOT FANLARI ISSN: 3093-8740

UO'K 614.7:504.5:614.2

THE IMPACT OF ATMOSPHERIC AIR QUALITY IN AREAS OF HEAVY TRAFFIC ON THE HEALTH OTHE POPULATION OF AN INDUSTRIAL CITY

Iskandarov Aziz Baxromovich
tibbiyot fanlari doktori, Farg'ona shahar, Central Asian Medical University.
E-mail: info@camuf.uz
ORCID *https://orcid.org/0000-0001-7386-6620*
Tel 998(95) 485-00-70

Xaitova Shaxnoza Inatullayevna
Assistant, Toshkent Tibbiyot Akademiyasi, Termiz filiali
E-mail: info@ttatf.uz
ORCID *https://orcid.org/my-orcid?orcid=0009-0003-7637-7832*
Tel 998(55) 452-55-86

ANNOTATION.

In the context of industrialization and intensive development of the transport network in large industrial cities, there is a steady increase in air pollution, especially in areas adjacent to major transport routes. This work is devoted to the study of the sanitary and hygienic characteristics of atmospheric air in such zones and their impact on public health. The study provides a comprehensive analysis of the composition of pollutants (including nitrogen oxides, carbon monoxide, particulate matter, etc.), and identifies the relationship between pollution levels and morbidity rates (respiratory, allergic, and cardiovascular diseases). The main goal is to assess the degree of risk to public health and formulate practical recommendations for improving the quality of the air environment and preventing diseases caused by exposure to transport emissions. The results can be used in the activities of health authorities, environmental services, and urban infrastructure planning.

Keywords: atmospheric air, transport routes, industrial city, sanitary and hygienic characteristics, air pollution, public health, respiratory diseases, vehicle emissions, environmental risk, disease prevention.

Introduction. Environmental safety is a global priority scale and is possible primarily if the condition is monitored environmental factors and sources of anthropogenic impact [1]. Understanding this problems served as an incentive to develop a risk-based approach in health protection strategies human and environmental impact assessment negative environmental factors [2].

In today's urbanized environment, there is a tendency to increase environmental stress due to the growth of technical equipment, intensification of use of urban areas and development of the transport complex network, which is a source of noise and pollution of atmospheric air [3]. This problem is particularly relevant for large cities [4]. Data from global epidemiological studies indicate that the fact that air pollution is the second largest after smoking tobacco use is a risk factor for the development of social significant non-communicable diseases. So thus, air pollution and its possible negative impact on the health of the population is extremely significant [5].

Pollutants in the air from motor vehicles account for more than 70 % of the gross domestic product emissions, including more than 50% of CO entering the atmosphere, are accounted for by vehicles. If the road surface is poor, at intersections, or when the engine is running, when idling, braking, or accelerating, CO concentration increases 2.5-4 times. In the summer, the concentration of CO increases, including in green areas of residential quaters. The average duration of CO's stay in the atmosphere is about two months. In this regard, it is advisable to study the levels of harmful environmental factors and the probability of adverse effects when exposed to substances that pollute the environment in order to justify and develop preventive measures in a particular region and locality [6].

The city of Termez is a medium-sized city with a sharply continental climate with an irrational distribution of traffic flows, a significant number of cars and a small amount of roadside landscaping. The accumulation of harmful substances in the city's air depends on depends on the traffic intensity of a car public transport. Number of vehicles on the map of Termez city highways in the last decade it remains consistently high [7]. Acoustic pollution is increasingly considered to be a serious threat factor for human health. The World Health Organization recognizes traffic noise one of the most acute problems in the life of the modern a person [8]. Due to the urgency of the transport problem, we conducted sanitary survey of the main transport highways of the city of Termez, which included study of traffic flow intensity with calculation of noise level and carbon monoxide concentration. In order to achieve the sanitary well-being of territories, it is necessary to develop effective preventive measures based on system analysis and results hygienic monitoring of the main risk factors for public health [9-10].

Research objective- conduct a sanitary and hygienic assessment of the main transport routes highways of the city of Termez.

Materials and methods. In the course of working with the method after the sanitary survey, the followings were identified: noise levels and carbon monoxide concentrations on the main highways of Termez. In particular, the doctors of the SEB and Termez City Health Center recorded: transport services (including number of cargo and public transport units per hour, average speed of the vehicle traffic flow, type of road surface parts, the presence of a dividing strip between roadways and structures noise-proof strip. In addition, the purpose of the adjacent land plot was determined territories (whether there is a hospital, kindergartens, etc.) educational institutions, industrial enterprises, waste disposal facilities public utilities, production, construction origin, etc. p.), the determination of the nature, placement was performed (remoteness) of sources of soil pollution, terrain features. As a result of hygienic assessment of Termez city highways (on Navoi, Ibn Sino, Imom at –Termiziy, Ulugbek, Harmony) was determined to be acoustic load and concentration of carbon monoxide in the atmospheric air by calculating using the standard method.

The air velocity on the day of the survey was 9 m / s, according to www. gismeteo.uz. Air pollution level air pollution with carbon monoxide near highways and at the boundaries of the adjacent residential development were made according to the standard method [22]. The results obtained, which reflect the level of noise and carbon monoxide pollution of atmospheric air in the roadside area and adjacent residential buildings, are processed mathematically and visualized using the Microsoft Office Excel package. In addition , the study used data from Internet resources https:2gis.ru/omsk, www.gismeteo.ru.

Acoustic load of the studied territories and surface concentrations of carbon monoxide on the territory of residential development, the main highways were evaluated for compliance with hygienic normatives1, 2.

Results of the study. The level of acoustic load and the degree of atmospheric air pollution with carbon monoxide near highways and at the border of adjacent residential buildings were determined at five points: A. Temur Street, Navoi Street, Imam at-Termiziy Street, Ulugbek, Totuvlik. The sanitary survey revealed a high traffic intensity of vehicles on the main highways of the city of

Termez, which does not depend on the rush hour . Average vehicle speed of the flow rate in the surveyed points was: Amir Temur Street – 50 km / h, Navoi Street-47 km / h, Ibn Sino Street-25 km / h, Imom at-Termiziy – 37 km / h, Ulugbek – 20 km/h. Low speed traffic at a number of points is caused by high traffic density and congestion of highways with vehicles. Type of road surface parts of the streets are paved with asphalt. There are no dividing lanes between the roadways. A strip of green spaces along highways in points under study is in a very small quantity. When studying the indicator of width between building lines in the studied points, the highest value was found on A. Temur Street (140 m), the lowest – on Totuvlik (38 m). The largest gap between the first – tier houses was on Navoi Street (60 m), the smallest-on at-Termiziy Street (5 m). The results of studying the degree of atmospheric air pollution with carbon monoxide near highways and the boundaries of adjacent residential development at the studied points are presented in Table 1. Surface concentrations of carbon monoxide in the territory of residential development near the highway (ul. Navoi; Totuvlik St., Imam at-Termiziy St.) meet the established hygienic standards and amount to 4.7 mg/m3, 3.6 mg/m3, and 4.5 mg/m3, respectively.

The surface concentrations of carbon monoxide in the residential area near the highway (Ib n Sino Street; Ulu g bek) do not meet the regulatory requirements and amount to 11.0 mg/m3 and 6.1 mg/m3, respectively. The result of the study of traffic noise levels on motorways and at the border of adjacent residential buildings is presented in Table.1

Table 3. **Estimated level of traffic noise on motorways and at the border of the adjacent residential development at the points under study**

Highway point under study	Noise level at highways, dBA	Noise level at building lines, dBA
st.Navoi	76,5	66,5
Totuvlik Street	74,0	70
Imom at-Termiziy	74,0	74,0
Ulugbek	71,5	64,5
Ibn Sino	71,5	61

Noise levels generated on highways (Totuvlik, ibn Sino) do not meet the requirements of regulatory documentation1 and are respectively 66.5 dBA, 70 dBA, 74 dBA. The noise levels generated on highways (Navoi; Totuvlik St., Imom at-Termiziy St.) meet the requirements of sanitary legislation1 and are 64.5 dBA and 61.5 dBA, respectively.

Conclusions. The study found that in the city of Termez the level of acoustic load and the degree of atmospheric air pollution with carbon monoxide at the main highways and at the border of the adjacent residential development generally exceeds the regulatory values specified in the documents regulating their maximum permissible levels. At the same time, it should be taken into account that a significant additional burden on the quality of atmospheric air in an industrial city is caused by the volume of emissions from enterprises, which largely increases the risk of negative health effects. Therefore, it is necessary to optimize the complex of preventive measures carried out in relation to reducing the level of acoustic load and carbon monoxide concentration in order to exclude their harmful impact on public health.

The results obtained by us allow us to make recommendations regarding the choice of management decisions aimed at: reducing the influence of the acoustic factor and effects of chemical air pollution on public health, which can be carried out in the following areas:

1) organization of sanitary protection breaks and bypass routes of communication outside the territory of the residential areas.

2) restriction of passage through residential territory for cargo vehicles (in the case of including allocation of urban roads for cargo transport traffic), which will reduce the intensity of traffic traffic flow on highways.

3) drawing up a noise map of the city Termez, it allows you to identify the most acoustically dangerous sections of the city, and rank transport highways by their degree determine the complex of factors that affect the acoustic regime, and recommend: rational placement of functional areas zones of the city in order to weaken or completely eliminate the influence of the main sources noise pollution of the city;

4) carrying out technical measures to reduce the acoustic load in residential areas and residential areas with taking into account the road category, traffic intensity, and type of development: shielding, the use of building structures and materials with high noise-absorbing properties, multi-layered glazing of windows, use of improved roadbed;

5) carrying out landscaping – planting trees, first of all, in the territory directly adjacent to the surveyed highways, which are most characterized by with heavy traffic, even in the absence of rush hour.

Literature used

1. Sitdikova A. A., Svyatova N. V., Tsareva I. V. Analysis of the impact of vehicle emissions in a large industrial city on the state of atmospheric air pollution //Modern problems of science and education. 2015, no. 3, pp. 591-591.
2. Pepina L. A., Sozontova A. N. Atmospheric air pollution by automobile and road complex / / Alfabuild. – 2017. – №. 1. – P. 99-110.
3. Dzhumalieva G. T. et al. Air pollution caused by road transport //Geographical sciences and education. - 2018. - pp. 144-147.
4. Stepanova N. V. et al. Assessment of the impact and risk for public health from atmospheric air pollution caused by vehicle emissions / / Fundamental Research. 2014, no. 10-6, pp. 1185-1190.
5. Podlipenskaya L. E., Topalova S. V., Alferova M. A. Assessment of the state of atmospheric air pollution by road transport in Kerch //Environmental monitoring and biodiversity. 2016, no. 1, pp. 100-104.
6. Poluektova M. M. Method of assessment of atmospheric air pollution by road transport using geoinformation systems //Abstract of the diss.... Candidate of Technical Sciences, Saint Petersburg, 2009.
7. Davletova N. H. Motor transport as a global source of atmospheric air pollution //Modern high-tech technologies. 2005, no. 4, pp. 90-90.
8. .Lezhneva E. I. Results of the study of air pollution by road transport on the streets of Kharkiv //Automobile Transport, 2013, no. 33. - pp. 110-114.
9. Kargapolov N. V. Technology of assessment of atmospheric air pollution by road transport //Eurasian Scientific Association. 2019, no. 10-4, pp. 351-356.
10. Novikov A.V., Chuikov Yu. S. Possibilities of using black poplar and white willow as bioind