

INFORMATION ON THE GENERAL CONDITION OF URBAN NOISE POLLUTION

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Introduction

It is known that the most stable city system is the street-road network. Therefore, the strategy of creating city transport systems affects on the highway and inter- highway territories noise regime. This influence is decisive. Note that along the highways and railways, significant corridors of acoustic discomfort are created. Therefore, the urbanist who determine the construction of highway and inter-highway territories, has to project not only the area of street noise influence in the development (zone of acoustic discomfort), but also should outline measures for noise protection.

Results and discussion

In the overwhelming majority of cities, the share of street spaces is within 18-24% of the residential area (an average of 21.2%). Approximately 1/5 of the city residential area is the main source of noise (8.7% of the urban development area).

For this reason, less urban area is used for streets and roads in Japanese cities. If in Washington they account for 43% of the city square, Vienna 35%, Berlin 26%, Paris 24%, London 23%, then Tokyo only 8.8%.

In the future, the design solutions provide for a decrease in the relative density of street spaces to an average of 15.1% (with the overall growth of residential areas for cultural and public services buildings and green common areas).

The share of residential areas varies in a wide range, but mostly lies within 30-65% of the urban development area, on average it is 41%. It remains significant in the future too - 46,5%. Of the remaining territories, 13.2% are for industrial and 3.8% for communal enterprises, most of which are potential sources of noise.

Another 7.9% of the urban development area is external transport - a source of intense noise.

So, about 30% of the urban development can be attributed to noise sources of varying intensity.

Analysis of cities general plans shows that districts occupy most of the residential area (65.2%). In the future, their share will be 54.4% or 25.1% of the urban development area. This area needs reliable protection from external noise [1-4].

Protected areas should also include green plantations of general use, which form an entire system and constitute about 8-9% of the urban development.

Thus, about 80% of the residential area or 37% of the urban development area need noise protection. Concerning the residential area, it can be said that 80% of the territory that needs to reach acceptable sound levels (55 dBA) can become a kind of coefficient of acoustic comfort (ψ_a). Only 20% (streets and squares) will be attributed to the area of acoustic discomfort (η_a) [5].

The territory of many cultural and consumer institutions is not so great. Their share in the residential area is 5.5% (5,1m²/hum.). However, in order to prevent mistakes in the development of city plans, the system of housing estate, cultural and consumer institutions needs to be justified from the point of noise regime view. Unfortunately, the noise regime of many institutions of this system was not subjected to thorough research and analysis. For the estimated period, the share of the territory of these institutions in the balance of the residential areas of existing cities will increase to 11.7%, that is, these territories will double.

The maximum permissible sound levels are not justified for most of these territories. Elimination of this disadvantage will allow to better organize the service, to balance the expected noise regime in sections of public buildings.

Taking into consideration Building code 360-92** [6], with an average number of storeys in a residential area of 9 floors, 15.9% of the territory is a source of noise (streets and squares 14%, garages 1.4%, parking in the public center 0.5%). Partially they can include territory of cultural and consumer institutions (from 4% \to 8,3%). Then, and in the design process, it is necessary to achieve a coefficient in a residential area $\psi_a = 80\%$.

Conclusions

1. One of the main factors of air pollution is noise.
2. About 80% of the residential area or 37% of the urban development area need protection from noise.
3. Analysis of cities general plans shows that micro-districts and neighborhoods occupy most of the residential area (65.2%). This area needs to be reliably protected from external noise.
4. In the future, the design solutions provide for a certain decrease in the proportion of street spaces to an average of 15.1% (with the overall growth of residential areas for public service buildings and green spaces of public use).
5. From literary sources it turns out that territories that are obvious sources of noise are streets and squares - 14%, garages 1.4%. parking in the public center 0.5% [7].

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