

Health risk assessment for large industrial cities population under the noise exposure

Dmitrii Koshurnikov¹

¹ Federal Scientific Center for Medical and Preventive Health Risk Management Technologies

Corresponding author's e-mail address: kdn59@yandex.ru

ABSTRACT

The impact of noise on health is proved in many epidemiological studies.

However, the topic of the health risk evolution in the areas of acoustic discomfort is not fully understood.

Study purpose - evaluation of chronic noise exposure in areas of acoustic discomfort and health risk using modeling and instrumental measurements.

Study object –Russian city with intensive road transport and a high level of aircraft noise.

Methods: acoustic calculations in the places of residence were carried out.

A city noise map with the use of 1300 noise sources was made.

Noise levels were compared with population health data according to geographical areas using GIS technology.

Noise exposure scenarios, mathematical models to assess the risk evolution were prepared. Zones with different noise levels were identified. Risk assessment showed that noise level of 59.9 dB forms a moderate risk of cardiovascular disorders, the risk will be formed by the age of 68; 61.5 dB noise level creates a risk by the age of 45, in the maximum noise load (66,6dB) zone - by 20 years.