

Ceeminy  
Appendix 2  
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The growth of modern high-rise buildings significantly affects the existing climatic conditions of the terrain and the environmental balance of the living environment. At the same time, the density of urban development, the infrastructure and transport networks play an important role in changing the living environment. Urban development as a combination of complex architectural forms significantly affects the aerodynamics of the terrain. In this regard, both industrial areas and high-density residential areas are environmentally unfavorable. Thus, high-rise buildings and structures, being an integral part of a modern city, significantly aggravate the environmental conditions of urban areas.

One of the important components of the living environment of a city is the residential environment. The unified system “man - apartment - building - neighborhood - residential area of the city” defined in the scientific literature as “residential environment” has complex features and mechanisms. A human being, interacting with the residential environment, performs non-productive activities on the territory of populated areas. In big cities, the development of the living environment, mainly consisting of multi-storey buildings, high-rise buildings and modern public spaces, causes variation in temperature and wind directions of the terrain and aggravates the environmental situation [4].

High-density residential areas of the city, being the most important part of any metropolitan area, where comfortable living conditions are created for their residents, are exposed to the constant impact of pollution sources. The main sources of air pollution in residential areas include industrial enterprises, heating boiler houses and road transport. The economic growth and the increasing pace of construction of high-rise residential buildings, public and business centers in big and metropolitan cities, have resulted in an increase in business activity and use of motor transport. Motor transport as a mobile source of pollution is the main source of air pollution in residential areas. Due low location and close proximity to the residential area, motor vehicles create extensive and stable zones of pollution, with the concentration of pollutants in the air exceeding the permissible level by several times.

A modern city with high-rise buildings is a fairly effective system of heating the vertical surfaces of buildings and horizontal surfaces of roofs, sidewalks and roads with solar heat [8]. At the same time, the high-density construction of certain areas hinders natural aeration and causes the formation of urban heat islands that affect the pollution of the air basin. (Fig. 1) [10].

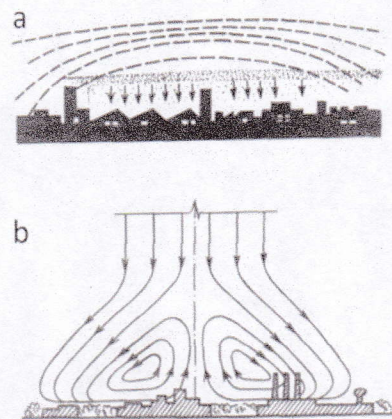


Figure. 1. “Urban heat island” formation: a - dissipation of industrial emissions in the “urban heat island” (deep surface inversion); b - circulation in the lower atmosphere over the city.