

HYGIENIC ASSESSMENT OF UNSUITABLE SHELTERS IN A LARGE CITY DURING HOSTILITIES

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The situation that is happening in Ukraine in general and in Kharkiv in particular, as in a city that has been shelled with rocket salvos and artillery from the first day of the current war, has required the urgent placement of the civilian population in shelters. Unfortunately, as it turned out, their number didn't meet the needs of a large city. The placement of people at metro stations was enough reliable in terms of protection from shelling, and since the end of February, hundreds of people have found shelter there. Hundreds of city dwellers came there only to spend the night, but for other hundreds of Kharkiv residents, it replaced the house for weeks, and in some cases for months. For people who lost their dwellings as a result of the destruction of houses and fires, it became the only possible option for living, especially given the low air temperature in February-March. At the same time, a significant number of residents, in particular those for whom metro stations were not within walking distance, preferred to hide from shelling in the basements of apartment buildings.

The aim of our study was to find out the presence of risk factors associated with the unsuitability of improvised shelters for long-term stay of people, and their impact on the health of residents of a large city.

Polling was conducted among of 74 heterosexual residents aged 19 to 76, in different districts of Kharkov, using specially designed questionnaires, as well as a direct survey of shelters.

As our research showed, the conditions in the makeshift shelters don't meet the minimum sanitary standards, but this was the only way to save the lives of the city dwellers. Many people (about 70 % of respondents) chose stay in the basements of apartment buildings as the only possible option for the duration of the air raid, some had to hide in garage pits or boiler house. And it turned out that in about 60-70 % of cases, basements are generally unsuitable for people to stay in them for a long time. This was mainly due to their flooding. Even in basements with relatively normal air humidity, in the vast majority of cases there was no water supply and sewerage, ventilation occurred only naturally, through small windows and doorways. The air temperature was usually low. And only an insignificant part of people used special shelters of civil defense at administrative facilities, in the buildings of educational institutions, etc.

According to our research, 77.5 % of respondents noted low temperature and high humidity in shelters, which led to hypothermia. This caused a deterioration in general well-being in 48 % of respondents, 32.5 % of respondents noted the appearance of symptoms of acute respiratory viral infections; joint pain appeared in 23 %. In addition, prolonged stay in shelters was accompanied by a feeling of weakness, lack of energy (36.5 %), irritability (35 %), depression (45 %).

About 40 % of the respondents complained about the accumulation of a large number of people in small rooms, which led to the accumulation of carbon dioxide, and 37 % of the respondents complained about the symptoms of oxygen starvation. People note that they had to periodically go outside to "breathe the fresh air", thereby putting their lives in danger due to frequent shelling. In addition, the low level of

illumination had a negative effect on general well-being and mental state. In 65 % of shelters, artificial lighting was constant, but about 30 % considered it insufficient.

In half of the shelters, the lighting periodically disappeared, especially during shelling, which caused to increase the anxiety that was already inherent in the inhabitants of the city. In such cases, mobile phones or flashlights were used as alternative sources of illumination. Under the influence of all the above factors, more than half of the respondents noted a deterioration in general well-being, more than a third - a negative impact on the psychic state, mood and quality of sleep, about a third - a decrease in body resistance.

Analyzing the data of the survey and our own observations, we can conclude that most of the premises that were forced to be used as shelters, don't meet the minimum sanitary standards. It worsens the health of people who are already in a stressful situation of an ongoing threat to health and even life. It is worth noting that the people in charge have learned from this catastrophic situation, and the city authorities are repairing and equipping the existing basements.

This is especially important for Kharkiv due to its specific geographical location close to the state border, which suggests a high probability of continued shelling for a long time. It was also decided to design all newly constructed buildings taking into account the availability of shelters that meet hygiene standards and positions to ensure accessibility and safety.