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## **SANITARY AND HYGIENIC ASSESSMENT OF CLASSROOMS USED FOR STUDY BY STUDENTS OF GROUPS 183 “ENVIRONMENTAL PROTECTION TECHNOLOGIES” AND 101 “ECOLOGY”**

Lighting is divided into natural, artificial and common lighting: the most favorable for human organism is natural lighting. Common lighting is lighting that uses both natural and artificial light at the same time. Lighting should meet a number of hygienic requirements: it should be sufficient, uniform, should not dazzle your eyes, and create unnecessary contrast on the work surface. The level of illumination of the work surface is controlled by the light meters of such modifications as Yu-116, Yu-16, Yu-17 and Yu-117.

The illumination of workplaces, studies, classrooms, laboratories in technical schools and higher educational establishments should be at least 400 LK according to the standard of the National Security Council 2.04.05-98. The ratio between light fluxes from windows and artificial illumination should be 2: 1. The total illumination should be at least 25-30% of the illumination in the workplace. The illumination should be at least 50% at the distance of 0.75 m from the workplace and it should be at least 30% at the distance of 5 m from the workplace.

All educational premises in general educational institutions should have natural lighting. The orientation of the windows in classrooms should comply with the requirements of DBN B.2.2-3-97. In the light zone of Ukraine (53 degrees, north latitude), the highest level of natural light is from the south-east side, and therefore the maximum number of school premises should be oriented to this side of the horizon. For long study days, the east side is recommended, for the first shift classes – western. It is forbidden to orient classrooms to the north (except for the rooms of fine arts and drawing, where uniform lighting is required).

Poor workplace lighting is one of the reasons for low productivity. In poor light, workers can suffer from eye strain, it is difficult to distinguish between objects being processed, the pace of work is reduced and general condition of the human body is deteriorating.

Irrational lighting of premises leads to visual discomfort; it reduces mental and physical performance, increases visual fatigue as well as promotes the development of several diseases.

To determine the level of general and natural lighting in classrooms, measurements were made at 8:30, 11:20, 13:00 and 15:00. There were selected four classrooms: 1-P, 316 with the north and south side of the rooms, 318 and 403-a. We measured the illumination in the rooms at distances of 1, 2, 3, 4, 5 m from the window on a horizontal line. The photocell was kept parallel to the floor at the height of the table (0.8 m from the floor).

Natural lighting in the 1-p audience is sufficient at a distance of 1m at 11:20, 13:00 and 15:00, at other time and distance, natural lighting is insufficient. In the classroom 318 natural lighting is sufficient at 11:20 at a distance of 1m. It is also sufficient at 13:00 at distances of 1m, 2m and 3m from the window. In the classroom 316, natural light from the south and north at 13:00 is sufficient at any distance, but it is better from the south. In the classroom 403, natural light is enough at 8:30 at a distance of 1m, at 11:20 at distances of 1m and 2m, at 13:00 at distances of 1m, 2m, and 3m.

In 1-P classroom, the level of common lighting is the lowest, at distances of 1, 2 and 3 m at different time there are indicators can be higher than 400 Lk but at a distance of 4m the indicators are 240 Lk on average. It can be explained by the fact that the point is evenly located between two lamps and is away from the window. At a distance of 5m the indicator is 370 Lk on average, although this point is the farthest from the window, but it is below the lamp and therefore, according to the requirements, is at the acceptable level.

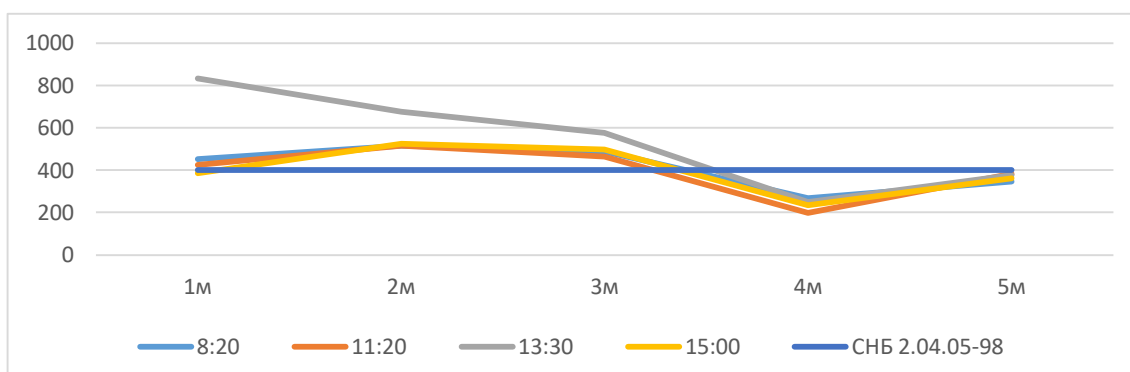


Figure 1. Common Light in the classroom 1-P

In the classroom 316, the indicators at different distances and at different time meet requirements of the National Security Standard 2.04.05-98 and are more than 400 LK. The lamps are correctly and evenly set up in this room there.

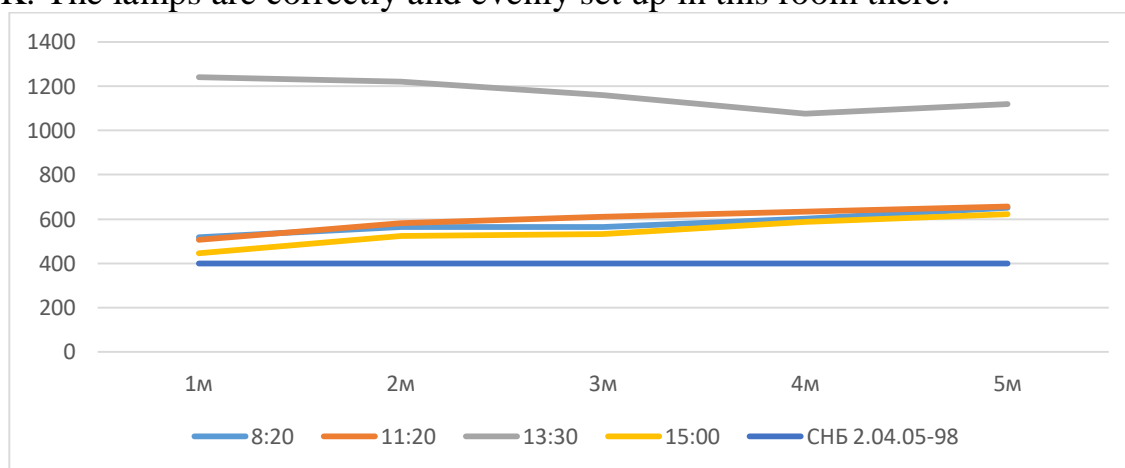


Figure 2. Common Light in the classroom 316

In the classroom 318, the indicators are higher than 400 LK and the room is well lit at 13:00. At distances of 3m, 4m, 5m at 8:30, 11:20 and at 15:00, the indicators are lower than those in the standard of the National Security Council 2.04.05-98 (not less than 400 LK). The same hours at distances of 1m and 2m indicators are satisfactory and they are higher than 400 Lk.

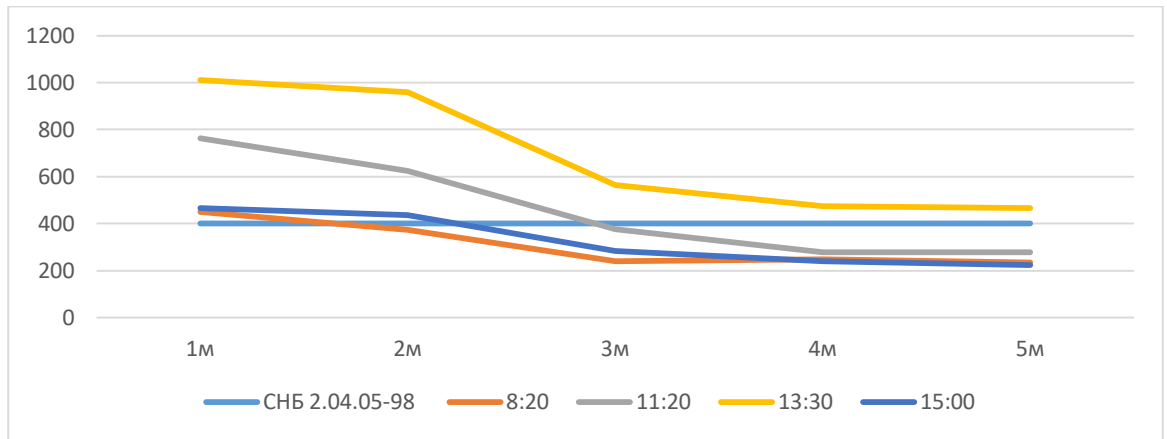


Fig. 3. Common Light in the classroom 318

In the classroom 403, the indicators meet the standard of the SNB 2.04.05-98 and are more than 400 LK. These indicators are getting lower with the distance from the window but they comply with the requirements.

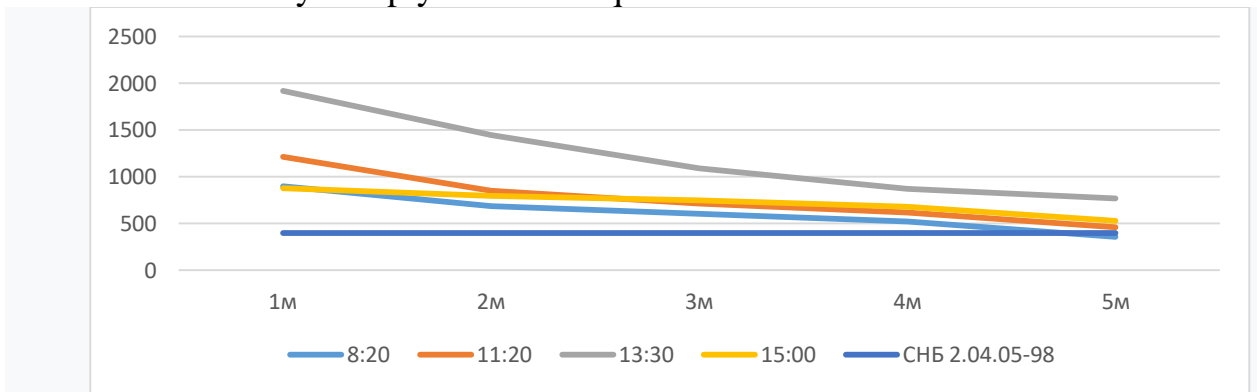


Figure 1.3. Common Light in the classroom in the classroom 403

The main sources of light for room illumination are incandescent and discharge lamps of various types. Each type of lamp has its disadvantages and advantages. The incandescent lamps (LR) belong to the light sources of thermal radiation; their light output is 10-15 lm / W. The specific power of fluorescent lighting should be 24-28 W / sq. m, for incandescent lamps - 48 W / sq. m. For local lighting, lamps with a lamp power of 200 watts are used. The luminaires are located at safe distances from the lifting devices and from ways of moving loads.

In classrooms, the lamps should be placed in 2 rows parallel to the line of windows at a distance of 1.5 m from the outer and inner walls, 1.2 m - from the blackboard, 1.6 m - from the back wall. The distance between the rows of lamps should be 2.5-2.65 m.