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# RESEARCH OF INFLUENCE OF HARMFUL FACTORS ON ACTIVITY OF WORKERS WHICH WORK WITH COMPUTER TECHNIQUE

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The parameters of sanitary-hygenic factors of productive environment on the workplaces of permanent or temporal stay of workers in the process of labour activity with a computer technique are investigated. As a prophylaxis of rugged influence of microclimate parameters is offered complex of protective measures for analysable conditions.

Keywords: computer technique, microclimate of working area, research, systems of conditioning, sound-inculating protections

*Entry.* Pre-condition of organization of work on creation of favourable conditions of labour is an objective estimation them the actual state, id est all elements of productive environment it follows systematic to add research with the purpose of deconditionination of their accordance to the existent norms.

It is known that implementation of any work during great time is accompanied by the fatigue of organism which shows up in the decline of worker capacity. Next to physical and mental work on its fatigue a productive environment influences considerably.

*Raising of task.* A research purpose is a study of the state of microclimate and noise in apartments with a computer technique and development of facilities for achievement of possible conditions of labour.

*Materials and results of researches.* Research of microclimate is executed: temperature, relative humidity and air movement rate, - in the apartments of ASC PAJ «Zaporizhcoke». For comparison we examined also the microclimate of computer hall of ZSIA with the use of standard measuring apparatus.

It is set that is not provided necessary for one worker at general to the sanitary norms area in the computer hall of ZSIA and ASC PAJ «Zaporizhcoke». The analysis of the got results testifies to the necessity of increase of general sanitary-technical requirements to air of working area. At the normative values of temperature 22-24 °C and relative humidity 40-60 % for the warm period of year we looked increase of temperature in the computer hall of ZSIA on 5.4-6.4 °C and relative humidity on 8.0-12.4 % in АСУ РАЈ «Zaporizhcoke» and on 6 % in the computer hall of ZSIA.

In accordance works [2] we executed the calculations of the system of climatization air for moving away of surplus warmth and moisture.

The size of total calorification was deconditionined at a formula:

$$Q_{\Sigma} = Q_{ç.î.} + Q_{â.î.} + Q_{ñ.ð.} + Q_{ж} + Q_{îáë} + Q_{ø.î.} + Q_{ë} + Q_{í.ï.}, \quad (1)$$

where $Q_{e,l\text{-}t}$, $Q_{i.p}$ - a warmth which acts through external light-tight and internal protections respectively, kW/hours; $Q_{s.r.}$ - a warmth of solar radiation, kW/hours; $Q_{in}$, $Q_{p.e}$, $Q_{l.l}$ - warmth, which acts from infiltration, productive equipment and lamplight respectively, kW/hours; $Q_w$, $Q_{h.d}$ - warmth which is distinguished by worker personals and heater devices respectively, kW/hours.

The values of general selection of moisture calculated with the use of equation:

$$W = W_{m.o.} + W_{з.п} + W_{ш.р} + W_{ін} \ , \qquad (2)$$

where $W_{t.e}$ – a moisture, which is distinguished by an equipment during implementation of technological processes, kg/hours; $W_{m.s}$ – a moisture from the moistened surfaces, kg/hours; $W_w$, $W_{h.d}$ - moisture which is distinguished by the skin of workers, and acts with external air for infiltrations respectively, kg/hours.

For assimilation of harmful conditions which are distinguished in apartments, it is necessary to provide admission of certain quantity of air, (kg/year) including:

- for neutralization of warmth surplus $G_Q$:

$$G_Q = \frac{Q_{èç}}{0{,}24 \cdot \Delta t_p} \ , \qquad (3)$$

where $\Delta t_p$ - the rationed increase of internal temperature above its external level, °C;

- for neutralization of excretions of moisture $G_W$:

$$G_W = \frac{W}{d_â - d_n} \ , \qquad (4)$$

where $d_i$, $d_r$ - content of moisture of internal and reveal air respectively, kg/hours.

The executed calculations allowed to set that apartment of ASC PAJ «Zaporizhcoke» must be additionally equipped by one autonomous conditioner as «*Daikin FTXB*60*C*» and computer hall of ZSIA - by two autonomous conditioners as «*Mitsubishi Heavy SRK*40*HG-S*».

Researches, that it is executed by the engineers of ZSIA, showed that in the apartments of АСУ PAJ «Zaporizhcoke» is looked the considerable rejections of sound-level on workplaces from sanitary norms.

For the decline of sound-level to the normative values expedient is the rational planning of apartment with the location of the most noisy equipment in separate parts with a sound-proof partition. A sound-proof protection from two flat partitions with an air interval between them is offered. For the exception of influence of ambientnoise it is suggested to use glass with thick a not less than 5.0 mm. Sufficient decline of sound-level at sound-insulating arrive at the use of double-layer glass with an air-gap.

*Conclusions.*

1. Results of researches for microclimate of working areas of workers with a computer techniques at the conditions of ASC PAJ «Zaporizhcoke» and also computer hall of ZSIA was fixed necessity of increase of general Sanitary-technical requirements to air of working area.

2. For the decline of sound-level to the normative values it follows to use for the conditions of the noted apartments more modern and less noisy equipment: laser

printers and conditioners, and also to carry out the rational planning of apartment with a sound-insulating protection. Sufficient decline of sound-level at sound-proofings arrive by use of double-layer glass with an air-gap.

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