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Hygienic Analysis Of Microclimate Indicators At Polymer Production Enterprises

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Annotation. During the study, unfavorable microclimate indicators were assessed at the Jizzakh enterprise for the production of polymer products. The microclimate indicators at the enterprise for the hot period of the year (July, August) differed somewhat from comfortable indicators. The air temperature in the workshop for the production of consumer goods was above the maximum permissible dose from 0,8^{0}C to 6,9^{0}C. In the workshop for the production of polyethylene products films from 3,6^{0}C to 5,5^{0}C, in the workshop for the production of polyethylene pipes - from 3,80C to 4,60C, and at workplaces in the workshop for the production of polyethylene components from 3,80C to 4,60C.
Key words: production of polymer products, air temperature, microclimate indicators, air humidity, air speed, thermostable state.

Introduction

Polymer materials characterized by relatively cheapness, lightness and strength. Therefore, they are widely used in industry and production. However, most of them are toxic, easily flammable, some release toxic substances when heated above 60°C. Therefore, work with polymer materials carried out in separate production rooms with a relative humidity no higher than 70% and an air temperature no lower than 15°C [1, 2].

The increase in the number of days and cases of loss of work capacity due to cardiovascular diseases, in many cases, the fact that workers work in unfavorable microclimatic conditions, in a high nervous-spiritual state, as well as the fact that constant physical stress with a high specific gravity is the main factor. [4, 6].

Temperature homeostasis achieved by regulating the amount of moisture loss and the evaporative properties of the environment, which is the main indicator of studying skin temperature. The generation and transfer of heat in the human body is not only dependent on the ambient temperature, but also on the humidity of the air. Because of combining the temperature factor with air humidity, the dynamics of the above-mentioned processes can be determined. It should be taken into account that air humidity in many production enterprises is a necessary factor in the production technology, as well as being a factor affecting the physiological state of the workers' organism [3, 5, 7].

Research methods: Physical method, indicators of unfavorable microclimate in workplaces were determined using the "Assman" psychrometer and anemometer.

Results and Analysis:

According to sanitary rules and standards 0324-16 "Sanitary-hygienic standards of microclimate in production buildings", the optimal (permitted) air temperature that ensures a high level of work ability for employees in workshops is +22-24^{0}C (+20-29^{0}C) in the warm season of the year, in the cold season during the period it should be equal to +17-19^{0}C (+15-21^{0}C).

The relative humidity of the air, which is one of the next indicators of the microclimate, should not exceed the optimal (fixed) 40-60% in the warm period of the year (45% is set at 29^{0}C), and it should be 40% (75%) in the cold period of the year. Another indicator of the microclimate is the speed of air movement, which is 0,3 m/s (0,4-0,7 m/s) in the warm season, and 0,2 m/s (0,4 m/s) in the cold season. not more than s) is specified in regulatory documents.

In the hot season of the year at the enterprise, the air temperature in the workplaces of the consumer goods production workshop was 29,8±0,1^{0}C at 9.00, 33,8±0,35^{0}C at 12.00, and 35,9±0,25^{0}C at 15.00 and the indicators were permissible dose increased from 0,8^{0}C to 6,9^{0}C.

In the workplaces of the production workshop of polyethylene film products, it was 32,6±0,42^{0}C at 12.00, 34,5±0,32^{0}C at 15.00, from permissible dose 3,6^{0}C to 0,5 increased up to 5 ^{0}C, and in the workplaces of the polyethylene pipe production workshop was 32,8±0,07^{0}C at 12.00.

The indicators of microclimate in the production workshops of polymer products in the warm and cold periods of the year described in tables 1 and 2.

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The microclimate indicators for the hot months of the year (July, August) are somewhat different from the comfort indicators, according to the information given in the table, the air temperature in the workplaces of the consumer goods production workshop is 29,8 ± 0,1^0 C at 9.00, and 33,8 at 12.00 it was ±0,35^{0}C, and at 15.00 it was 35,9±0,25^{0}C. This indicates that the air temperature has increased from 0,8^{0}C to 6,9^{0}C from permissible dose. This indicates that the air temperature has increased from 0,8^{0}C to 6.9^{0}C from permissible dose. In the workplaces of the production workshop of polyethylene film products at 12.00 p.m., it was 32, 6±0,42^{0}C, and at 3.00 p.m., it was 34, 5±0,32^{0}C and increased from permissible dose by 3,6^{0}C to 5,5^{0}C, and in the workplaces of the pipe production workshop, it was 32, 8±0,07^{0}C at 12.00 and 33, 6±0,53^{0}C at 15.00 has increased from 3,8^{0}C to 4,6^{0}C from permissible dose.

In the cold period of the year, has found to be lower than optimal, but meet the requirements of permissible dose. The change of the remaining indicators of the microclimate almost not observed. The speed of air movement was the lower limits of the permissible standards (Table 1).

Table 1

Indicators of microclimate in workplaces of workers in low-pressure polymer products production shops, M±m

Place of manufacture	Period of the year	Air speed, m/s			Air temperature C^0			Relative humidity %		
		9^{00}	12^{00}	15^{00}	9^{00}	12^{00}	15^{00}	9^{00}	12^{00}	15^{00}
Consumer goods	warm	16,6±0,26	18,3±0,14	19,6±0,23	49,2±0,2	47,0±0,02	45,6±0,1	0,3±0,06	0,29±0,3	0,26±0,09
	cold	29,8±0,12	33,8±0,35	35,9±0,25	42,0±0,13	41,7±0,11	40,9±0,13	0,31±0,21	0,28±0,11	0,26±0,08
The place of production of polyethylene film products	warm	28,2±0,35	32,6±0,42	34,5±0,32	42,0±0,3	40,8±0,3	40,1±0,08	0,29±0,1	0,25±0,5	0,21±0,07
	cold	17,3±0,43	18,5±0,18	20,9±0,5	48,5±0,1	46,8±0,41	44,3±0,4	0,3±0,09	0,28±0,8	0,24±0,05
The optimal permissible rate according to the regulatory document	warm	22-24^{0}C (20-29^{0}C)			40-60% (up to 45% at 29^{o}C)			up to 0,3 m/s (0,4-0,7 m/s)		
	cold	17-19^{0}C (13-21^{0}C)			40% (at 75%)			up to 0,2 m/s (up to 0,4 m/s)		

As a result of research, it was determined that the air temperature and air movement speed of the microclimate indicators in the workplaces of the polyethylene pipe production workshop and the polyethylene components

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production workshop correspond to the upper and lower limits of RED in the warm and cold periods of the year (Table 2).

Table 2

Indicators of microclimate in workplaces of workers in low-pressure polymer products production, M±m

Place of manufacture	Period of the year	Air speed, m/s			Air temperature C^0			Relative humidity %		
		9^{00}	12^{00}	15^{00}	9^{00}	12^{00}	15^{00}	9^{00}	12^{00}	15^{00}
Polyethylene pipe production workshop	warm	28,4±0,58	32,8±0,07	33,6±0,5	42,7±0,08	41,0±0,3	40,5±0,02	0,3±0,15	0,27±0,2	0,26±0,18
	cold	16,8±0,21	19,3±0,3	20,8±0,2	49,3±0,1	48,1±0,2	45,9±0,03	0,28±0,1	0,25±0,3	0,22±0,1
The place of production of polyethylene film products	warm	28,7±0,87	31,8±0,04	34,5±0,65	42,9±0,08	39,8±0,3	39,1±0,02	0,3±0,15	0,28±0,2	0,25±0,18
	cold	17,8±0,21	19,9±0,3	20,8±0,2	48,6±0,1	46,6±0,2	45,3±0,03	0,28±0,12	0,26±0,34	0,22±0,11
The optimal permissible rate according to the regulatory document	warm	22-24^{0}C (20-29^{0}C)			40-60% (up to 45% at 29^{0}C)			up to 0,3 m/s (0,4-0,7 m/s)		
	cold	17-19^{0}C (13-21^{0}C)			40% (up to 75%)			up to 0,2 m/s (up to 0,4 m/s)		

Microclimate parameters in workplaces due to proper organization of ventilation of rooms, microclimate in different workplaces had different parameters.

During the research, when comparing the results of the meteorological factors obtained from the observed sexes with the hygienic standards, it found that these factors are in accordance with the hygienic standards.

When we compared the results of measuring air temperature from microclimatic factors in the workshops, it has observed that the results obtained were higher than the permissible norm in the warm period of the year than the temperature norm in workplaces

Conclusion: Conclusion: Because of the analysis of unfavorable microclimate indicators in the high- and low-pressure polymer products production facilities in Jizzakh, it found that the air temperature in the workplaces of all production facilities in the warm period of the year is higher than the permitted norm for microclimate indicators

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