



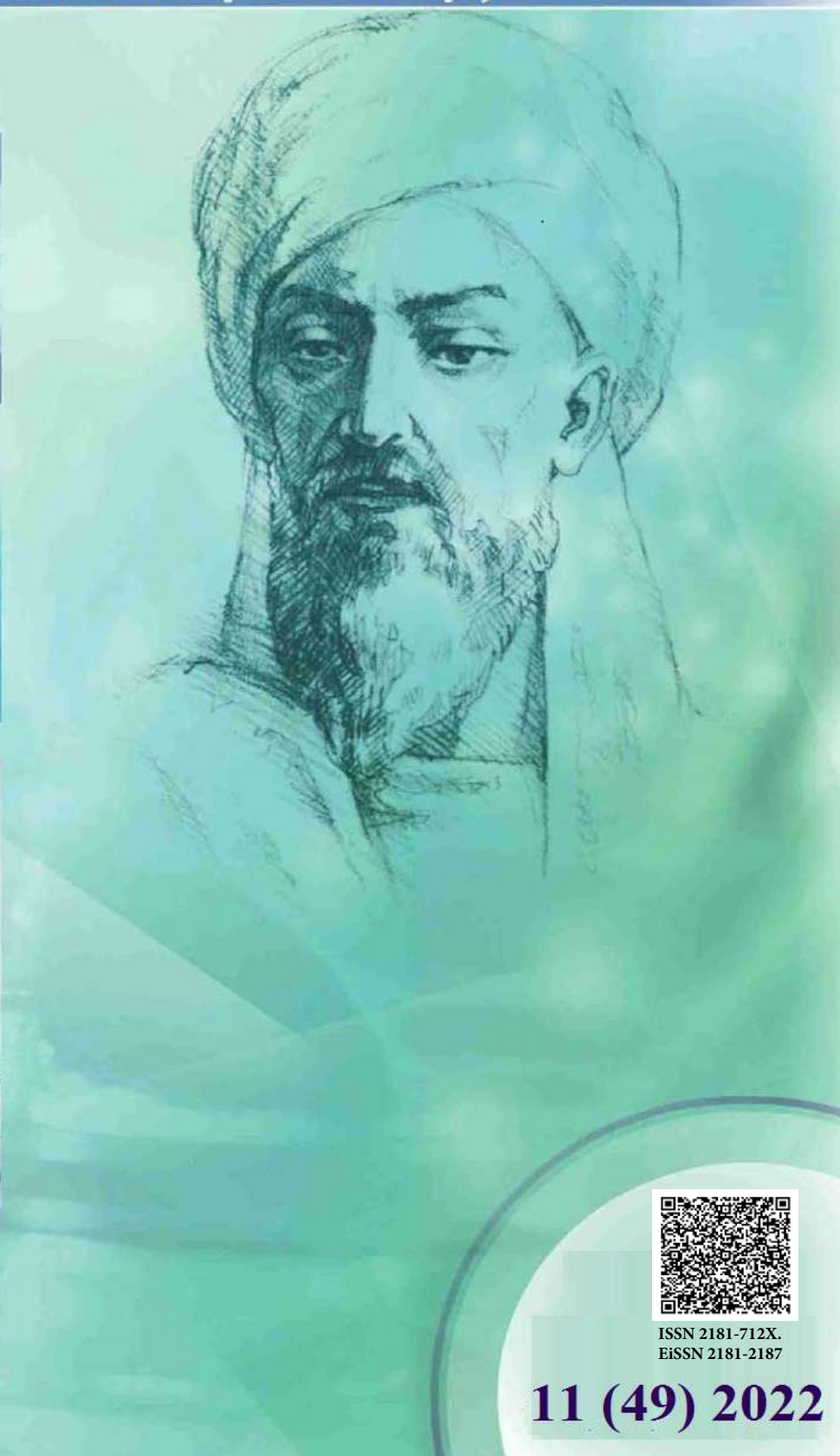
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ASSESSMENT OF ILLUMINATION INDICATORS IN A POLYMER PRODUCTS MANUFACTURING ENTERPRISE

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✓ *Resume*

In the assessment of lighting indicators at the polymer products production enterprise, it is necessary to focus mainly on the evaluation of the lighting in the workplaces and the prevention of changes that occur as a result of its non-compliance with the specified hygienic indicators, the provision of natural and natural lighting in the workplaces, and the elimination of the changes that occur in the body of workers as a result of its changes. The lighting in the controlled enterprise is one-way, natural lighting enters workplaces through windows from the side, and artificial lighting is provided by fluorescent lamps of LB-40, DRL-250 type, and artificial lighting in four workshops of the enterprise, i.e., the first consumer goods development workshop 466.7 ± 13.3 lk, natural illumination is of mixed type, illumination from the side is 1.6% (REM-0.6), artificial illumination in the production workshop of polyethylene films is 108.0 ± 24.6 lk, less than the norm, high pressure polyethylene fitting meets the hygienic requirements of lighting in the production workshop of pipes, while in the fourth polymer pipe production workshop artificial lighting is 183.3 ± 18.8 lk, in the second workplace it is 238.3 ± 8.8 lk, and in the 3rd workplace 403 It was 3 ± 9.3 lk. It was found that the artificial lighting in the first and second workplaces is below the norm by 61.7-116.7 lk, and in the rest of the places it meets the requirements of QMQ 2.01.05-98 "Natural and artificial lighting" at the standard level. It is desirable to provide reasonable medical and artificial lighting in order to improve the work and vision of the workers. The labor process in the enterprise under study requires eye strain. This requires providing rational conditions for natural and artificial lighting and proper organization of lighting.

Keywords: polymer products, workplace, illumination, discharge, background, contrast.

ГИГИЕНИЧЕСКАЯ ОЦЕНКА ОСВЕЩЕННОСТИ ПРИ ПРОИЗВОДСТВА ПОЛИМЕРНЫХ ИЗДЕЛИЯХ

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✓ *Резюме*

Оценка показателей освещенности на предприятии по производству полимерных изделий должна быть направлена в первую очередь на предупреждение изменений, связанное с нарушением освещенности на рабочих местах и ее несоответствием установленным гигиеническим показателям, обеспечение естественного и искусственного освещения на рабочих местах, устранение нарушений в организме работников, вызванных его изменением. На контролируемом предприятии освещенность односторонняя, естественная освещенность через боковую сторону поступает на рабочие места, а искусственная освещенность через люминесцентные лампы типа ЛБ-40, ДРЛ-250, а в четырех цехах предприятия, т. е. в первом цехе производства товаров народного потребления, искусственная освещенность составляет $466,7 \pm 13,3$ ЛК, естественная освещенность смешанного типа, боковое освещение 1,6% (КЕО-0,6), искусственное освещение $108,0 \pm 24,6$

ЛК в цехе по производству полиэтиленовых пленок, меньше нормы, в то время цехах полиэтиленовый фитинг высокого давления соответствовал с гигиеническим требованиям, освещения в цехе по производству труб, в цехе по производству полимерных труб в четвертом цехе искусственное освещение составляло $183,3 \pm 18,8$ ЛК, во втором цехе $238,3 \pm 8,8$ лк, а в цехе 3-403, $3 \pm 9,3$ ЛК. Установлено, что искусственное освещение на первом и втором рабочих местах ниже нормы на $61,7-116,7$ ЛК га, а на остальных участках соответствует требованиям СНиП.2.01.05-98 "Естественное и искусственное освещение" на уровне нормы.

Целесообразно обеспечить рациональное естественное и искусственное освещение на организма работников с целью улучшения их трудовой и зрительной деятельности. Трудовой процесс на изучаемом предприятии требует напряжения глаз. Это требует обеспечения рациональных условий естественного и искусственного освещения и правильной организации освещения.

Ключевые слова: полимерные изделия, рабочие места, освещенности, разряд, фон, контраст.

POLİMER MAHSULOTLAR ISHLAB CHIQRISHDA YORITISHNI GIGIENIK BAHOLASH

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Toshkent tibbiyot akademiyasi

✓ *Rezyume*

Polimer mahsulotlari ishlab chiqaruvchi korxonada yorug'lik ko'rsatkichlarini baholash, birinchi navbatda, ish joylarida yorug'likning buzilishi va uning belgilangan gigienik ko'rsatkichlarga mos kelmasligi bilan bog'liq o'zgarishlarning oldini olishga, ish joylarida tabiiy va sun'iy yoritishni ta'minlashga, tanadagi buzilishlarni bartaraf etishga qaratilgan bo'lishi kerak. u tufayli kelib chiqqan ishchilar soni.o'zgarish. Boshqariladigan korxonada yoritish bir tomonlama, tabiiy yoritish yon tomondan ish joyiga kiradi va LB-40, DRL-250 tipidagi lyuminestsent lampalar orqali sun'iy yoritish va korxonaning to'rtta sexida, ya'ni birinchisida. iste'mol tovarlari ishlab chiqarish sexi, sun'iy yoritish $466,7 \pm 13,3$ lyuks, polietilen plyonka ishlab chiqarish sexida tabiiy aralash turdagi tabiiy yoritish, yon yoritish 1,6 % (KEO-0,6), sun'iy yoritish $108,0 \pm 24,6$ lyuks, me'yordan kam, sexlarda yuqori bosimli polietilen armatura gigiyenik talablarga javob bergan holda yoritish, yoritishda quvur ishlab chiqarish tsexi, to'rtinchi sexda polimer quvurlar ishlab chiqarish sexida sun'iy yoritish $183,3 \pm 18,8$ lyuks, ikkinchi sexda $238,3 \pm 8,8$ lyuks, 3-403 tsexda esa $3 \pm 9,3$ LK. Birinchi va ikkinchi ish joylarida sun'iy yoritish me'yordan $61,7-116,7$ lx ga pastligi, boshqa ob'ektlarda esa SNiP.2.01.05-98 "Tabiiy va sun'iy yoritish" talablariga javob berishi aniqlangan. norma. Ishchilarning mehnat va vizual faoliyatini yaxshilash uchun ularning tanasini oqilona tabiiy va sun'iy yoritishni ta'minlash maqsadga muvofiqdir. O'rganilayotgan korxonadagi mehnat jarayoni ko'zni zo'riqtirishni talab qiladi. Bu tabiiy va sun'iy yoritish uchun oqilona sharoitlarni ta'minlash va yoritishni to'g'ri tashkil etishni talab qiladi.

Kalit so'zlar: polimer mahsulotlari, ish joylari, yoritish, razryad, fon, kontrast.

Relevance

The polymer products production industry is now considered one of the special branches of the chemical industry. Today, polymer materials, called plastics, are firmly established in our lives. It is difficult to imagine a person's existence without them, because they are found in every house, at every step and allow to solve various tasks. With their use in the production industry, various sectors of the national economy and especially human life opportunities have significantly expanded [2,4,5,6,9,10,11].

Polymer products are widely used in many industries due to their unique physical and chemical properties, characterized by high mechanical and thermal resistance, low specific gravity and corrosion resistance.

Illumination plays an important role in the production of polymer products. Illumination workers play a special role in regulating the most important functions of the organism. Correctly selected lighting improves the function of vision, has a good effect on the health of workers, and increases labor productivity. When the illumination is low, the occurrence of myopia, a decrease in work performance is observed [1,3,7,8,9,10,11].

The low level of illumination in workplaces depends on the cleanliness of the lamps and windows, the color of the walls and ceilings. It has been observed that if windows are not washed in time, the lightness index decreases up to 50-70%, and due to dust, it decreases up to 80%.

The purpose of the research is to determine the indicators of illumination in the workplaces of the polymer products production enterprise, to give them a hygienic assessment, to improve the development of scientifically based preventive measures aimed at optimizing the working conditions of workers and maintaining their health.

Material and methods

In order to check the lighting conditions in workplaces and places outside the workshop, lighting networks in the workshop were measured during the working day. Illuminance indicators were measured using the Argus-01 brand luxmeter and State Standard 2.49.40-81 "Buildings and facilities. Methods of measuring illumination in production at workplaces" were determined based on The state of natural lighting in production was evaluated in percentages according to the coefficient of natural lighting (TYoK), and the artificial lighting was evaluated in lux (lk) according to the indicators of illumination in workplaces. The obtained results were evaluated hygienically, taking into account the requirements of QMQ 2.01.05-98 "Natural and artificial lighting". Statistical processing of the research results was done using the "Statistica for Windows 7.0" personal computer application package.

Result and discussion

Among the factors of production, illumination occupies an important place. Illumination plays a special role in regulating the most important vital functions of the body. Substandard lighting in the premises of the production enterprise leads to a decrease in visibility, which causes injuries in the workplace and a decrease in the quality of the product.

Rational organization of natural and artificial lighting is of great importance in order to improve lighting and activate the activity of the body. Properly selected lighting provides normal conditions for vision, health of workers, increases labor productivity and reduces the possibility of industrial injuries.

Illumination in the enterprise is one-way, and natural light enters workplaces through windows from the side. Artificial lighting is provided by LB-40, DRL-250 fluorescent lamps. The work process is mainly during the day and is carried out in one shift. The illumination during the working day is of a mixed type.

The enterprise has 4 shops, the 1st shop produces consumer goods. The main occupations in this trade are polymer product automatic line operators and polymer product pourers. The main task of the polymer product caster is to pour various types of products and parts into molds under pressure in thermoplastic machines using simple molds. The work performed by the eyes of this profession belongs to category V "a". Workers in this workshop do small precision work. The smallest size of the object is 1-5 mm, equal to the low-contrast of the dark background. Artificial illumination in the general lighting system during the working day was 466.7 ± 13.3 lk (see Table 1). Natural lighting was of a mixed type, side lighting was 1.6% (REM-0.6).

In the production of polymer products, automatic line operators perform the tasks of carrying out the technological process of the production of polymer products on an automated circulation line, preparing the line for operation, loading polymer raw materials into the feeding hopper, preparing containers for placing finished products, monitoring the progress of the technological process, and regulating processing parameters. The work performed by the eyes of this profession belongs to the V"a" discharge, the smallest size of the object is 1-5 mm, the background is dark, and the contrast is small. Artificial lighting in workplaces meets the requirements of QMQ 2.01.05-98 "Natural and artificial lighting".

The second workshop of the controlled polymer enterprise consists of a workshop for the production of polyethylene films. The main occupations here are: technologists, foremen, polymer welders and machinist dispatchers. In this workshop, the work performed by the machinist forwarders with their eyes refers to the V^a discharge, the smallest size of the object is 1-5 mm, the background is dark, and the contrast is small. When determining the indicators of illumination in workplaces, it was found that the artificial illumination was 108.0 ± 24.6 lk, which was less than the norm when compared with QMQ 2.01.05-98 "Natural and artificial illumination" (REM 300 lk).

The main tasks of polymer welders include welding, joining and processing of various parts made of polymer materials. The work performed by the eyes of the workers in this profession belongs to the IV^a level, it is the work of average precision, the smallest size of the object is 0.5-1 mm, the background is dark, the contrast is considered low, and the indicator of artificial illumination in the workplace is 145.0 ± 24.7 lk. established (REM-300lk). The indicator of artificial illumination was found to be 155 lk less than the norm.

High pressure polyethylene fitting pipe production workshop in the third workshop of the controlled enterprise. In this workshop, polymer raw materials are loaded in 25 kg bags into the hopper and sent to the thermoplastic automatic machine, the melted raw materials are poured into ready-made molds, and the finished product is developed after cooling. In this workshop, the main profession of workers are forwarder casters, technologists, and machinist operators. The indicators of artificial lighting in these workplaces meet the requirements of QMQ 2.01.05-98 "Natural and artificial lighting".

The 4th workshop of the enterprise is a workshop for the production of polymer pipes, which produces pipes of various diameters intended for drinking and sewage. In this workshop, inspections are carried out near the raw material mixing hopper, near the thermoplastic automatic device, near the finished product cooling equipment, and according to the results of the inspection, the artificial lighting in the first workplace in the general system is 183.3 ± 18.8 lk, in the second workplace it is 238.3 ± 8 , It was 8 lk and 403.3 ± 9.3 lk at the 3rd place of work. It was found that the artificial lighting in the first and second workplaces is below the norm of 61.7 - 116.7 lk. In the rest of the workplaces, it was determined that it meets the requirements of QMQ 2.01.05-98 "Natural and artificial lighting" at the standard level.

The company operates a crushing section. In this section, low-quality polymer products are processed by sawing and grinding in a granulator. When the illuminance indicators were measured in front of the bench and saw for grinding low-quality polymer products, it was found that the artificial illumination was higher than the norm in the general system, but it was found that the artificial illumination in front of the granulator device was 233.3 lk lower than the norm and was 76.7 ± 14.5 .

Table 1

Indicators of illumination in workplaces of production of polymer products

Workshop	Work load	Artificial lighting	
		General system	
		During the inspection	QMQ 2.01.05-98
Workshop №1			
Casters of polymer products	V ^a	466,7± 13,3	300
Automatic line operators	V ^a	320±11,4	300
Workshop №2			
Machinist forwarders	V ^a	108,0 ± 24,6	300
Polymer welders	IV ^a	145,0±24,7	300
Workshop №4			
At the beginning of the workplace	V ^a	183,3±18,8	300
In the middle of the workplace	V ^a	238,3±8,8	300
At the end of the workplace	V ^a	403,3±9,3	300
Grinding unit			
In front of the grinding machine	III ^b	333,3±10,9	300
In front of the saw	III ^b	355,0±5,8	300
In front of the granulator	III ^b	76,7± 14,5	300

Conclusion

It should be noted that it is important to improve lighting and activate the activity of the organism, rational organization of natural and artificial lighting. In these shops, the lower than standard illumination of machinist forwarders, polymer welders in front of the granulator device and in some workplaces of the 3rd shop causes eye strain and fatigue of the eye analyzer. Therefore, it is necessary to rationally organize lighting in workplaces. Inadequate lighting in workplaces at our enterprise was caused by not replacing burned-out lamps on time, low power of lamps, and not cleaning window panes and ceilings of local lighting.

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