

Таким образом, безопасность продуктов питания заключается в том, что они не должны содержать токсичных элементов и пищевых контаминантов, опасных для жизни человека. Следовательно, необходимо углублять исследования по определению химического состава пищевых продуктов, а также расширять фундаментальные исследования в области биохимии и физиологии животных, что даст возможность изучать метаболизм пищевых ингредиентов, выявлять опасные контаминанты пищи, обуславливающие аллергию, фармакологическое воздействие и ряд других факторов.

Библиографический список

1. Сорокин, В.С. Развитие рынка продукции животноводства в системе обеспечения продовольственной безопасности/ В.С. Сорокин // М.: Агроинженерия. –2020.–№2(96).–С.40-44.
2. Технический регламент Таможенного союза 021/2011 «О безопасности пищевой продукции».
3. ТР ТС 034/2013 «О безопасности мяса и мясной продукции».
4. ФЗ РФ «О качестве и безопасности пищевых продуктов» №29 от 02.01.2000.
5. <https://pravovoi.center/zpp/produkty/kachestvo-pr/trebovaniya-k-myasu.html>.

ANALYSIS of the POSSIBLE INFLUENCE of LIGHT ENVIRONMENT PARAMETERS ON the PERFORMANCE of MACHINE MILKING OPERATORS

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Annotation. Non-compliance of sanitary and hygienic conditions in the workplace with regulatory requirements leads to increased fatigue and, as a result, reduced performance, quality of work and productivity, and increased injuries in the workplace. It is shown that there is a need to deepen research on the influence of light environment parameters on the efficiency and productivity of machine milking operators and develop proposals for designing milking parlors taking into account rational workplace lighting systems.

Key words: harmful factors of production, milking machine operator, working place, parameters of light environment.

As a result of a special assessment of jobs at Russian enterprises, it was found that about 39 % of jobs did not meet sanitary and hygienic standards: the level of exposure to harmful production factors significantly exceeds the established standards. These include: noise level, microclimate parameters, the state of the light environment, i.e. those factors that, as a rule, do not require significant investment to bring them to standard parameters. The analysis showed that at almost 70% of the workplaces of machine milking operators, the level of illumination does not meet regulatory requirements, and light sources are selected without taking into account their lighting characteristics, including the spectrum of emitted light.

But do not meet the sanitary-hygienic conditions in the workplace regulatory requirements are leading to increased fatigability and, as a consequence, reduced performance and ultimately, quality of work and productivity, increased injuries in the work place [1-3]. Thus, the level of injuries to women in animal husbandry in recent years exceeds the average for the Russian Federation by 2.5 times [1,2]. From the point of view of occupational safety, light, its quality, visual ability and visual comfort are extremely important. In various types of industrial activities, the number of accidents related to lighting in one way or another is on average 30-50% of the total number. In rough work, about 1.5% of serious fatal injuries occur due to low light conditions. Eye injuries during these operations range from 7.8 to 31.1% of the total number of accidents.

Improving labor efficiency and productivity when changing the harmful factors of the labor process at agricultural enterprises is due to the fact that increasing labor productivity is one of the key tasks of successful economic and social development of Russia in the context of a trend to reduce the number of people employed in agriculture in the country.

A number of studies show that, for example, violations of the light regime can reduce working capacity and labor productivity by up to 25% (figure) [4,5].

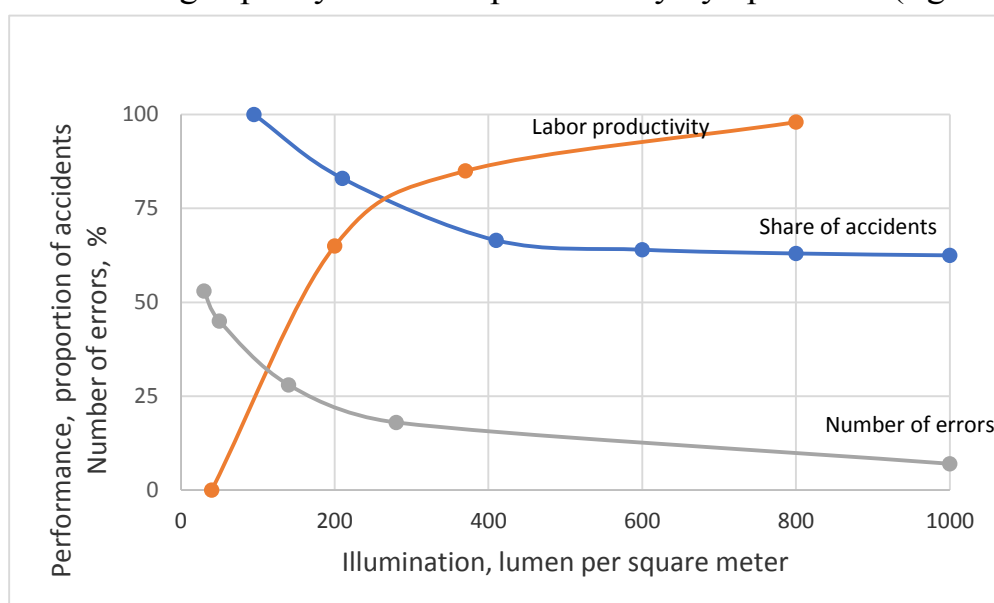


Fig. Dependence of some production parameters on the workplace illumination

In animal husbandry, reduced efficiency and increased fatigue of machine milking operators is not only a decrease in labor productivity, but also a decrease in the quality of technological operations, not performing them in full (high-quality washing, udder massage, etc.), which ultimately increases the bacterial contamination of milk (reduces the quality), leads to incomplete milk output (reduces the productivity of cows, leads to mastitis). However, there are no in-depth studies showing a clear relationship between these factors of the light environment and the fatigue, performance and productivity of machine milking operators.

Lighting is one of the most important conditions for productive and safe work. Through the visual apparatus, a person receives about 90 % of information. Sufficient lighting has a tonic effect, improves the flow of the main processes of nervous activity, stimulates metabolic and immunobiological processes, and affects the daily rhythm of the physiological functions of the human body.

Labor productivity is affected not only by the level of illumination, but also by the spectral composition of light. Studies show that if the output in natural light is taken as 100%, then in red and orange lighting it is only 76%.

However, too bright light blinds, reduces visual functions, leads to overexcitation of the nervous system, reduces performance, and disrupts the mechanism of twilight vision. Exposure to excessive brightness can cause eye burns, keratitis, cataracts, and other tissue disorders.

In the course of many scientific experiments, scientists have come to the conclusion that the excess volume of blue color in the spectrum of most LEDs created on the basis of a blue crystal directly and negatively affects the physiological processes in the human body, in particular, the production of the hormone melatonin. (Melatonin regulates our daily rhythms and is responsible for the frequency of sleep and wakefulness. It is this hormone that sets up the human body to rest and sleep at the end of the day) An excessive dose of blue light, which is present in the spectrum of conventional led light sources based on blue crystals, slows down the secretion of melatonin, which leads to a disorder of circadian rhythms, deterioration of health, causes insomnia and discomfort, and, as a result, can provoke: a decrease in immunity and the development of cancer, diseases of the cardiovascular system, hypertension, coronary heart disease, reproductive disorders, diabetes, etc. [5].

Blue light through the ganglion cells and centers of the hypothalamus affects the epiphysis, which synthesizes melatonin, then the pituitary and adrenal glands, which produce cortisol and more than 50 different steroid hormones.

Thus, the analysis showed the need to deepen research on the influence of light environment parameters on the performance and productivity of machine milking operators and develop proposals for designing milking parlors, taking into account not only the level of lighting, but also the spectral composition of light and the areas where light sources are located at the workplaces of machine milking operators for various types of milking units.

REFERENCES

1. Shirokov Yu. A., Smirnov G. N. ACTUAL PROBLEMS of LABOR PROTECTION in MODERN AGRICULTURE // In the book: Applied, search and fundamental socio-economic research: integration of science and practice. Samara. 2018. Pp. 57-72.(In Rus.).
2. Cividino S.R.S., Pergher G, Gubiani R, Moreschi C, Da Broi U, Vello M, Rinaldi F. Definition of the methodology for gradual and sustainable improvement of farm safety and its preliminary application // Agriculture. 2018. 8.7.
3. Leijten F. R. M., van den Heuvel S. G. Ibema Yu. F., van der Ya. a. Beck, V. S. Robroek Ya., Burdorf A. Influence of chronic health problems on working capacity and labor productivity: a longitudinal study among older workers // Scand J Work Environment Health. 2014. 40(5). 473-482. DOI: 10.5271/sjweh.3444/.
4. Shishegar N., Bubekri M. Natural light and productivity: analysis of the impact of daylight on the health and alertness of students and employees // International conference " Health, biology and life science "(HBLS-16). Istanbul, Turkey In 2016. 151 -155.
5. Okman Zh., S. Neupane, Correct I. K., Relative N., Klas-Hakan N. At the workplace measures to improve performance: a systematic review and meta-analysis of their effectiveness // Scandinavian J work Environ health. 2018. 44(2): 134-146. DOI: 10.5271/sjweh.3685.