MEASURES TO ENSURE NOISE AND VIBRATION SAFETY IN MANUFACTURING ENTERPRISES

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Abstract: *This article provides information on measures aimed at regulating noise and vibration in production enterprises and preventing their negative effects on workers' health.*

Keywords: *noise, vibration, vibration, safety, worker health, productivity, vibration measurement, noise control.*

Enter. Protecting the health of workers and employees during production, fully protecting their work is one of the priority tasks of our state. As we know, there are many problems related to noise and vibration in the production process. As a result of these problems, cases of occupational diseases among workers are increasing day by day. In order to reduce the damage of such negative effects, many works are being carried out in our republic. The main goal of such works is to organize workplaces in comfortable conditions for workers.

Dysfunction of the nervous system exposed to noise is associated with changes in metabolism in nervous tissue. The brain, an organ of high physiological activity, is very sensitive to oxygen starvation. Brain hypoxia develops under the influence of noise, because noise increases the tone of cerebral vessels, reduces blood circulation in its tissues, which is the result of a change in the state of the vasomotor center in response to noise stimulation. Vegetative reactions accompanied by deterioration of blood circulation, heart failure, blood pressure changes in various organs are felt, especially under the influence of 65-95 dB noise [3].

According to scientists, noise reduces life expectancy in large cities by 8 to 12 years. In ancient China, even blasphemy was executed. Physiological and biochemical adaptation of people to noise is impossible [4].

Relevance of the topic. Among the many manifestations of the impact of noise on the body, one can distinguish the clarity of speech, discomfort, the development of fatigue and a decrease in labor productivity, and finally, the appearance of noise pathology (hearing loss). Occupational hearing loss is called sensorineural hearing loss. The development of chronic occupational hearing loss is a long and gradual process [2; 3; 4].

Changes in the nervous system under the influence of strong noise are more obvious and precede the development of pathology of the hearing organ. Headaches, non-systemic complaints prevail among workers, dizziness, memory loss, increased fatigue, emotional instability, sleep disorders, palpitations and pains in the heart area, decrease. Appetite, etc. Noise reduces immunological reactivity, general resistance of the body in work noise occupations, which is manifested in the increase in the incidence of temporary disability by 1.2 times. 1.3 times with an increase in the industrial noise level by 10 dB. The impact of this noise on the human body is combined with the impact of other unfavorable factors of the industrial environment (vibration, temperature, harmful

substances). is typical for power plants, which increases the harmful effects of noise. body. As a result of observations, it was found that the general morbidity of workers working in noisy shops is on average 25% higher than the morbidity of workers with low noise level [1;2].

Normalized parameters of intermittent noise in workplaces are as follows;

Equivalent (in terms of energy) sound level of intermittent noise - constant broadband noise sound with the same sound pressure as the given intermittent noise in a certain time interval, dB;

Maximum sound level: for time variation and intermittent noise in dB; for impulse noise - in dB1.

From time to time, the levels of assessment of compliance with the maximum permissible values should be carried out both in terms of equivalent and maximum sound levels (in dB or dBA1).

The maximum permissible levels should be obtained in accordance with GOST 12.1.003 and SanPiN 2.2.4 / 2.1.8.10-32-2002.

Oscillations are vibrations of a rigid body around an equilibrium position. The feeling of vibration occurs when a part of the body comes into contact with objects that vibrate in a vertical or horizontal direction under the influence of some force. In this case, vibration causes a wave-like movement with alternating compression and stretching of tissues in this part of the body.

Vibration safety is the absence of conditions that cause or can lead to a deterioration of human health or a significant decrease in the level of comfort of his work as a result of the negative effects of vibration (Vibration safety is standardized according to the provisions of GOST 12.1.012.

According to its temporal characteristics, vibration is divided into:

- continuous oscillation, for which the value of the normalized parameters changes no more than 2 times (6 dB) during the observation period when measured with a time constant of 1 s;
- non-constant oscillation, for which the value of the normalized parameters changes more than 2 times (6 dB) during the observation time measured with a time constant of 1 s, including
- time fluctuations, for which the value normalized parameters change continuously over time;
- when a person comes into contact with a vibration, the vibration is interrupted intermittently, and the duration of the contact intervals is more than 1 s;

Vibration is one of the factors with important biological properties

The degree of propagation of vibrations through the body depends on their frequency and amplitude, the contact area of the body parts with the object of vibration, the place of application and the direction of the axis of the vibration effect, the damping characteristics of the vibration. Tissues, resonance phenomenon and other cases.

The long-term impact of vibration, together with a complex of unfavorable production factors, can lead to permanent pathological disorders in the body of workers, the development of vibration disease.

Methodology of scientific research work.*Surface source noise reduction:*exchange drum mechanisms with each other, with no emphasis on the so-called rotation,improved kinematics, the use of plastic materials, the use of sound-absorbing materials, vibration isolation, noisy components and jostey machines, covering noise-absorbing vibration surfaces, static and dynamic balan focus [5] .

Absorption: The method is based on the absorption of sound energy - Gies waves propagated through the air absorbing materials that convert heat.

Sound-absorbing materials and structures are divided into:

Fibrous-porous (felt, mineral wool, felt, acousto - -terrorist plaster, etc.);

Membrane (film, plywood, attached to wooden bars);

Resonator (classical Helmholtz resonator);

Combined.

The soundproofing ability of the structure is expressed by the following formula:

R = -10 lg / .

*Increasing the distance from machines (devices) that emit strong noise:*total noise level, dB, r, m distance from the source in free space

LE = L 0 + 20lg r -11

Where L 0 is the source noise level, dB.

*Personal protective equipment.*Ear Rako inserts can be used to reduce short noise by 5 dB -20 - failure:. Headphone, cotton, sponge, etc. If the noise level was higher than 120 dB, headphones (antiphones) and special helmets were used. Water -There are sound-attenuating stands, Distan insulating svershumnymi control processes.

Further noise reduction can be expected in production areas and, accordingly, in residential areas.

Results and conclusions. The maximum permissible level of vibration (MPL) is a working day (except weekends), but not more than 40 hours a week during the entire working experience, which should not cause deviations in the state of illness or health level of vibration parameter. with modern research methods, problems related to vibration that may occur in the work process or in the work activities of people today and future generations have been identified.

Working with manual machines, which mainly generate low-frequency vibration, leads to the development of vibration pathology.

Predominant damage to the neuromuscular and musculoskeletal system and less obvious vascular disorders. It is mainly caused by movement, vibration, percussion instruments that generate medium-high frequency (30-125 Hz or more).

Vascular, neuromuscular, osteoarticular and other diseases of various degrees. Angiospastic (convulsive contraction of small arteries) blood vessel disorders mainly occur when working with manual machines whose vibrations have a maximum energy level in the high frequency region of the spectrum (125-250 Hz and above).

Clinically, in the development of vibration disease caused by local vibration, there are 3 levels of its development (level I - initial appearance; level II - moderately obvious appearance; level III - clear symptoms

Vibration disease caused by the impact of general vibrations and shocks is observed in transport drivers and operators of transport technological machines and units. One of its main syndromes is vestibulopathy (dizziness, headache, etc.). There are often dysfunctions of the digestive glands, disturbances of the motor and secretory functions of the stomach. Causes typical changes in the spine, which is the cause of disability.

The systemic effects of general vibrations, characterized by a high level of vibration speed, can be the cause of vibration disease - it is a permanent disturbance of the physiological functions of the body mainly due to the effect of vibrations on the central nervous system. These disorders are

manifested in the form of headaches, dizziness, poor sleep, reduced performance, poor health, heart failure [6;7].

Additional factors of the production environment that increase the harmful effects of vibration on the body include muscle overload, high-intensity noise, unfavorable microclimate

Natural frequencies for most internal organs are in the range of 6-9 Hz. Vibrations of workplaces with certain frequencies are very dangerous because they can cause occupational diseases.

Vibration belongs to the group of occupational diseases; effective treatment is possible only in the initial stages. Restoration of damaged functions is very slow, and in especially severe cases, irreversible changes in the body occur, which lead to disability.

The normalized parameters of non-permanent industrial vibrations are equal to the frequency-corrected values of vibration acceleration and vibration speed or their logarithmic levels (in terms of energy). Sound-absorbing materials reduce the noise level by 7-10 dB.

When designing new industrial enterprises and workshops, it is an important task to determine the noise pressure levels that can occur in these industrial enterprises and workshops. It is known that taking into account that noise-producing machines and mechanisms are located in a workshop of an industrial enterprise, measures aimed at reducing the impact of this noise on the surrounding production enterprises and residential areas are taken into account during the design of the enterprise.

Timely planned and preventive maintenance of machines, improvement of working modes of machines, use of personal protective equipment, introduction and observance of work and rest regimes for workers, monitoring of vibration characteristics of machines and vibration load on the operator should be observed. is implied. Should be structures.

In short, noise and vibration have a very negative effect on the production process. As a result of noise and vibration, occupational diseases occur in workers. In order to prevent this, great attention is paid to noise and vibration prevention in production zones.

The main reason for this is to prevent workers from getting occupational diseases and to retain qualified workers and to ensure quality and orderly work.

Noise and vibration have a very negative effect on the human body, especially on the nervous system and mental state of a person. For this reason, it is necessary to prevent noise and vibration.

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