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<https://doi.org/10.61796/jgrpd.v1i3.560>**NOISE IN LARGE PRODUCTION ENTERPRISES,
ITS IMPACT ON THE HEALTH OF WORKERS
AND METHODS OF COMBATING NOISE****H. Pakhirdinov**Pakhridinov@gmail.com**A. Normirzayev****M. Toragulov***Received: Feb 22, 2024; Accepted: March 19, 2024; Published: March 28, 2024;*

Abstract: Industrial production is one of the main areas of economic development of any country, so it is worth saying that large factories play a very important role in achieving high productivity. Large production enterprises are important in meeting the demands and needs of society.

Keywords: Sound, Noise, Frequency, Mechanism, Mechanical, Electromagnetic.

This is an open-access article under the [CC-BY 4.0](https://creativecommons.org/licenses/by/4.0/) license**Annotation**

Noise, in the first place, exhausts the workers in the production enterprises from a psychological point of view, it follows that it has a great negative effect on the severe fatigue of the workers and a decrease in work productivity. Also, the situation of workers making mistakes in the work process is increasing. In addition, another major problem is that human senses can be seriously injured due to noise. As a result of constant high-frequency noise, changes can occur in the human nervous system and the functioning of the hearing organ. Among the human sensory organs, the hearing organ is of special importance. And through this organ, it can distinguish clean and noisy sounds. Therefore, it is necessary and necessary not to remain indifferent to this issue.

If we look at the current global scale, it is correct to say that the fight against noise in industrial buildings is one of the urgent problems of our day. This issue remains a serious issue in the production and use of large equipment and their details, and the fight against noise. The impact of noise on human health has been known over time. First of all, it causes mental exhaustion of employees in the enterprise, which can lead to a slowdown in the work process. In addition, the hearing organ of a person has its own importance. Exposure to loud noise is sure to affect the human nervous system. And there is a decrease in the function of the hearing organ. Any sounds that are unpleasant for humans are noise. The movement of air elastic vibrations caused by objects hitting each other, friction, and disturbance of the equilibrium state propagates as a wave in a solid liquid and gaseous medium. In this case, the particles of the environment create a vibration relative to the equilibrium state, and this vibration is much smaller than the speed of the vibration. The units of sound density and sound pressure, which are widely used in determining noise control measures, vary within very large limits (for example, density is 1016 times, and pressure is 108 times). The human ear distinguishes not the absolute change of the sound, but the relative change.

$$10 \lg \frac{I}{I_0} = 10 \lg \left(\frac{I_1}{I_0} + \frac{I_2}{I_0} + \dots + \frac{I_n}{I_0} \right)$$

or

$$L = 10 \lg (10^{L/10} + 10^{L/10} + \dots + 10^{L/10})$$

The practical importance of these expressions is well known during noise reduction in industrial enterprises. The reason for this is that if several noise sources are installed in an enterprise, the noise of several of them is reduced, there may be no change in the overall noise level. But if there are various noise-making mechanisms in workplaces, then it is appropriate to start the work by reducing the strongest noise-producing system. If several noise-producing mechanisms of the same level are installed in an industrial enterprise, then the total noise level is determined as follows: $L = L_i + 10 \lg n$, where L_i is the noise emitted by one car. It can be seen from this formula that the noise of two identical noise sources is 3 dB more than that of one.

Noise protection methods. Noise control measures are carried out in the following ways:

- 1) reduction of noise at its source;
- 2) change the direction of noise propagation;
- 3) rational planning of industrial enterprises and workshops;
- 4) acoustic treatment of rooms of industrial enterprises;
- 5) reduction of noise in the path of propagation.

Noise reduction at the source of emission. Reducing noise at the source is the most effective way to combat noise. The main reason for the origin of noise is the movement of the machine and mechanism or some of its parts, which created the movement of elastic waves in the air. It is appropriate to consider the moving parts that lead to the formation of such waves into mechanical, aerodynamic, hydrodynamic and electrodynamic types. Descriptions of the principles of operation of these machines and mechanisms and factors that cause noise are different. One main point that causes noise is common to all of them. This is to meet the standard requirements for their use and maintenance. Inaccuracies during preparation and maintenance are the main factor in noise emission.

Mechanical noises. Mechanical noise factors include: inertial forces caused by the movement of parts of various machine mechanisms at different accelerations, as well as impact forces in joints, frictional forces in joints, noises that appear as a result of pressure processing (drilling, stamping); noises unrelated to the work performed by the machine: sounds produced by ball bearings, gears, belt transmissions and uncoordinated rotating parts of mechanisms. The vibration frequencies of the rotating parts are determined by the ratio $n/60$. Sound pressure depends on the speed of rotation. For example, if the speed of rotation of ball bearings increases from n_1 to n_2 (rpm), the noise is determined as follows:

$$\Delta L = 23,3 \lg \frac{n_2}{n_1}$$

The main factor in reducing mechanical noise is to achieve as much accuracy as possible in the preparation of connecting parts of machine mechanisms. Often, the spread parts of machine mechanisms lead to increased noise. Timely lubrication of connecting parts of mechanisms also has a good result in reducing noise. In order to reduce mechanical noise, the following should be done: Replacement of impact processes with non-impact processes, for example, replacement of bevel gears

and eccentric gears with hydraulic gears, stamping with pressing, tapping with welding.

Hydrodynamic disturbances. Hydrodynamic noises can be attributed to the noises generated when sending liquids from one place to another with the help of pumps, mainly due to the failure of moving parts of the pump and the effects of hydraulic shocks. In order to eliminate them, it is necessary to determine the causes of these noises, that is, to ensure the proportionality of the moving parts of the pumps, to determine the measures aimed at eliminating the occurrence of hydraulic shocks.

Electromagnetic noises. As a result of mutual magnetic fields of the stator and rotor in electric motors, the waves generated when the rotor rotates and crosses the magnetic field are spread as electromagnetic noise. Reducing these noises is mainly achieved by structural changes of electric motors. For example, it is better to install curved wedges instead of straight wedges of the rotor armature. When electric machines work, aerodynamic noises are also emitted. For example, when the rotor rotates, sudden air waves are distributed as aerodynamic noise. In addition, there is also mechanical noise. If the electric receiver grinds the brushes well, the noise emitted during the operation of the electric motor is reduced to 610 dB.

Change the direction of the noise. If the noise source is directed in one direction, it is possible to reduce the sound pressure level by 10-15 dB on the opposite side. It can be used as an anti-noise measure in the design of some noise-dispersing devices, as well as industrial enterprises. For example, the exhaust shafts of compressed gas discharge systems, ventilation and compressors are directed in a certain direction. In this case, the exhaust pipes must be directed in the opposite direction from workplaces and residential areas.

Conclusion

There are employees of every large company in the world, each of whom suffers from noise, not only them, but it would not be wrong to say that it is a process that almost ordinary people face on a daily basis. In this process, a person will not be affected by diseases and effects that affect his health and future activities in various ways. When it comes to noise, no matter where we go, we encounter different types of noise on every front, it may be spreading at a higher hertz than our ears can accept, and these sounds have a serious effect on people's hearing. That's why he is an employee. Whether it is a normal person or not, it is necessary to observe safety rules and use special clothing and anti-harmful means when working in a noisy and vibrating place. This is the first method, and the second important method is the correct adjustment of the machine-mechanics, that is, I mean noise reduction.

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