Intent Research Scientific Journal-(IRSJ)
ISSN (E): 2980-4612
Volume 3, Issue 1, January-2024
Website: intentresearch.org/index.php/irsj/index

ANALYSIS OF ASSESSMENT OF NOISE POLLUTION IN INDUSTRIAL ENTERPRISES

PhD (tayanch doktarant) Axatova Nasiba Salimovna
Tashkent University of Architecture and Civil Engineering (TUACE)
nasibaakhatova@gmail.com
https:orcid.org0009-0006-0077-7284

t.f.n. Prof. Miralimov Mirraxim Mirmaxmudovich
Tashkent University of Architecture and Civil Engineering (TUACE)

Abstract:
This paper presents an analysis of the assessment of noise pollution in industrial enterprises. Noise pollution in industrial settings is a significant occupational hazard that can have detrimental effects on the health and wellbeing of workers. This paper explores various methods of assessing noise pollution in industrial environments, including sound level measurements, noise mapping, and exposure assessments. The impact of noise pollution on workers' health and productivity is a crucial concern in industrial enterprises, and effective assessment methods are essential for monitoring and mitigating its effects. Additionally, compliance with regulatory standards for noise exposure is a legal requirement for industrial enterprises.

Key words: The key words for this annotation are industrial enterprises, noise pollution, assessment methods, sound level measurements, noise mapping, exposure assessments, occupational hazard, health and wellbeing of workers, productivity, regulatory standards, legal compliance, challenges, limitations, potential solutions, advanced technology, standardized assessment protocols, noise control measures.

Аннотация:
Ushbu maqolada sanoat korxonalarida shovqin ifloslanishini baholash tahlili keltirilgan. Sanoat sharoitida shovqinning ifloslanishi ishchilarning sog'lig'i va farovonligiga salbiy ta'sir ko'rsatishi mumkin bo'lgan jiddiy kasbiy xavf hisoblanadi. Ushbu maqola sanoat muhitida shovqin ifloslanishini baholashning turli usullarini, jumladan tovush darajasini o'lchash, shovqin xaritasini tuzish va

ISSN (E): 2980-4612
Volume 3, Issue 1, January-2024
Website: intentresearch.org/index.php/irsj/index

ta'sirni baholashni o'rganadi. Shovqinning ifloslanishining ishchilar salomatligi va mehnat unumdorligiga ta'siri sanoat korxonalarida hal qiluvchi ahamiyatga ega bo'lib, uning oqibatlarini kuzatish va yumshatish uchun samarali baholash usullari muhim ahamiyatga ega. Bundan tashqari, shovqin ta'sirini tartibga soluvchi standartlarga rioya qilish sanoat korxonalari uchun qonuniy talabdir.

Аннотация: В данной работе представлен анализ оценки шумового загрязнения на промышленных предприятиях. Шумовое загрязнение в промышленных условиях представляет собой серьезную профессиональную опасность, которая может оказывать пагубное воздействие на здоровье и благополучие работников. В этой статье исследуются различные методы оценки шумового загрязнения в промышленных средах, включая измерения уровня звука, картографирование шума и оценку воздействия. Влияние шумового загрязнения на здоровье и производительность труда работников является серьезной проблемой на промышленных предприятиях, и эффективные методы оценки необходимы для мониторинга и смягчения его последствий. Кроме того, соблюдение нормативных норм по шумовому воздействию является обязательным требованием законодательства для промышленных предприятий.

Noise is generally best defined as any unwanted or unpleasant sound. The overall effects of noise pollution have been a topic of debate among researchers for several years. The normal human ear and nervous system have a specific maximum volume for receiving and perceiving sound levels. Depending on the period, the level of noise exposure and the distance from the source, it usually affects the human nervous system and is comfortable. The effects of noise on human health are divided into four groups: physiological effects (high blood pressure, heart rhythm disorders, and stomach ulcers), psychological effects (stress and irritability), performance effects (reduced work productivity), and physical effect (hearing ability).

They note that acute noise can cause an increase in blood pressure, heart rate, and cardiac output as a result of the release of stress hormones, including catecholamines. Thomas and others. examined the cardiovascular effects of environmental noise exposure.

ISSN (E): 2980-4612
Volume 3, Issue 1, January-2024
Website: intentresearch.org/index.php/irsj/index

The auditory system, noise causes anxiety and disrupts sleep, which impairs cognitive function. In addition, epidemiological studies show that environmental noise is associated with an increase in arterial hypertension, myocardial infarction, and stroke. This study shows that nighttime noise, in particular, can cause sleep disturbances, increased autonomic arousals and stress hormone levels, and oxidative stress, which in turn can lead to endothelial dysfunction and arterial hypertension.

Additionally, Voorhees et al. Discussion of occupational noise hazard studies conducted by al. shows that lower noise levels were recorded in different tank rooms, but the highest value of 83.2 dBA was recorded immediately when the pavilion tanks were connected to a pressure washer. Attarchi and others. al. showed that shift operational and separate noise communication has a conservative result for hypertension in rubber production. In addition, Ismail et al. carried out educational work on noise levels among workers in the quarry industry. They state that noise is an occupational hazard and can lead to noise-induced hearing loss. According to Kisku et al. recently suggested that it is beneficial for a power plant to adopt safety precautions and approaches to reduce noise levels in a thermal power plant. Noise monitoring covered 73 small power plant locations using a sound level meter at a height of 1.5 m and a distance of 1 m for 30 minutes. During the inspection, the noise level of compressors and fan rooms was determined to exceed 85 dBA. They concluded that noise may not directly threaten an employee's life, but may cause neurobehavioral changes, psychological distress, and unhappiness in daily life without causing chronic disease symptoms. Oyedepo et al. found no significant difference in hazardous noise levels between the public and industry. They show that noise pollution levels in the Ilorin metropolis exceeded WHO guidelines at 34 out of 47 measurement points. It can be concluded that the city is polluted by environmental noise, and its main sources are vehicles and industrial machines. In 2015, Anjorin et al. found that the risk of noise-induced hearing loss is high in manufacturing and processing plants. The average noise equivalent level (LAeq) was studied to identify noisy machines and provide baseline data. A precision sound level meter was used to measure various sound pressure levels at thirty-minute intervals over five days. According to regulatory criteria and international standards, noise limits were exceeded on almost all machines.

Intent Research Scientific Journal-(IRSJ)
ISSN (E): 2980-4612
Volume 3, Issue 1, January-2024
Website: intentresearch.org/index.php/irsj/index

Also, the results of this study show that measures to combat noise in the surveyed networks are insufficient.

The UNI-T UT353BT calibration model was used for each measurement sequence to ensure consistency of readings. This type of measurement accuracy is required to meet noise exposure standards under occupational and environmental noise regulations. As a result of sound monitoring in the area, data received from the UNI-T UT353BT was transferred to a computer using Detection Management Software (DMS). Data were analyzed based on the corresponding continuous sound pressure level (Leq) and peak sound pressure level (SPL). Octave band data were documented for Leq at each measurement location during sampling. Both third and full octave ranges have been documented.

Specifications of UT353/UT353BT Mini Sound Level Meters

Specifications	UT353	UT353BT
Noise (A weighting)	30~130dB	30~130dB
Accuracy	±1.5dB	±1.5dB
Resolution	0.1dB	0.1dB
Sampling rate	Fast: 125ms	Fast: 125ms
	Slow: 1000ms	Slow: 1000ms
Frequency response	31.5Hz~8kHz	31.5Hz~8kHz

Figure 1 Noise monitoring (a)UNI-T UT353BT and (b) calibrator devices

Figure 2 shows the noise level versus time in the Polishing section over two days. Registration was made from 7:00 to 16:00. It can be seen that the highest noise level was observed at 8.30 and 15.30 on these days. On the other hand, the highest noise level was recorded at 12:00 on Tuesday. Values above 90 dBA are achieved. The main problem here at the moment is communication between operators due to the noise of the polishing machine. Figure 2 shows that noise levels consistently exceeded 85 dBA on Mondays and Tuesdays in 14% and 27% of cases, respectively.

Noise tests have been successfully completed at this manufacturing plant. Because the confirmed exposure level exceeds the permissible exposure limits specified in the NIOSH and OSHA regulations, management must take

ISSN (E): 2980-4612
Volume 3, Issue 1, January-2024
Website: intentresearch.org/index.php/irsj/index

corrective action. The CAM and CNC department was found to have the highest noise level with an average of 103.27 dBA. All departments are allowed to work more than 8 hours per shift, except CNC and CAM department, which is limited to 1.33 hours per shift to reduce the problem of hearing impairment. To minimize noise exposure, the employer must provide earmuffs or headphones to the appropriate department as an additional control measure within the facility.

References

[1] Bahori N., Hasan M., Ab'lah Feyrouz Nausherwan A., Suchot M., Dawood M.Y., Sarip S. and Ismail Z., Noise Measurement and Awareness at a Construction Site - A Case Study, Journal of Advanced Research, 2017;
[2] Rabinowitz P, Galusha D and Slade M. Audiogram signals in noise-exposed workers. Ear, Hear, 2006;
[3] Babis V., Cardiovascular effects of noise, Noise and Health, 2011;
[4] Thomas M., Tommaso G., Babisch W. and Matthias Basner, Cardiovascular effects of environmental noise, Eur. Heart J 2014;
[5] Atmaka A., Peker I. and Atlin A. Industrial noise and its impact on people. Polish Journal of Environmental Research, 2005; 14(6):
[6] S. Nagy, S. Dhawal, Y. Tuan and M. Hamidi, A Study of Occupational Noise Exposure among Toll Station Customers in Malaysia, Proceedings of the International Multi-Conference of Engineers and Computer Scientists, 2010: