Nigerian Journal of Engineering, Technology, Science and Environment; 01 (2025): 2493-4671

NIGERIAN JOURNAL OF ENGINEERING, TECHNOLOGY, SCIENCE AND ENVIRONMENT

Journal homepage: www.njetse.dsust.edu.ng

Noise Pollution on Industrial Workers: A Case Study of Some Companies In Delta State.

Ekpe, I[*1]., Akinola, O[2]., Onyiriuka, F[3]., Olaye, M[3].

[1]Department of Civil and Water Resources Engineering, Southern Delta University, Ozoro
[2]Division of Biomedical Engineering, University of Saskatchewan, Saskatoon, SK, Canada
[3]Department of Industrial Production Engineering, Southern Delta University, Ozoro

ARTICLE INFO

keywords:
Noise pollution
Decision making process
Industrial
Noise level
ANOVA

ABSTRACT

Noise pollution has become a significant threat to humans and their quality of life, presenting one of the most serious factors that companies and industries must consider in their decision-making processes. This study was aimed at investigating noise pollution on industrial workers using Company A Gas Plant and Company B Oil & Gas in Kwale, Delta State, Nigeria. as a case study. The study adopted a systematic approach in order to achieve this. These include; comparison of the level of Noise in Selected Company Workplaces with international standards, ascertaining the effects of Noise Levels on Industrial Workers, and suggesting ways of mitigating the effects of Noise Pollution on Industrial workers.

The study was carried out in two selected companies in Kwale, Delta State. Materials used for data collection included; sound level meter, acoustic calibrator, tripod or mounting clamp, windshield, GPS, note pad. The sound level meter was used to obtain readings from twelve (12) different locations. The data were daily records of noise from Turbines 1, Turbines 2, Generator 1, Generator 2, Pipes Under the bridge to the Flare area, Pressure Valve at Flare area, Flare stack at Company A Gas Plant and Readings were taken from Generator 1, Generator 2, Compressor Unit 1, Compressor Unit 2 and Flare Stack at Company B Oil & Gas Company. The data was analysed using the one-way ANOVA tool.

The result obtained from the respondent of Survey Questionnaire of Company A Gas Plant were analysed to ascertain the effect of Noise Levels on workers which gives the following: 36% High Blood Pressure, 47% Hearing Impairment, 82% Stressful, 76% Speech Interference and 46% Headache. The respondent of Survey Questionnaire of Company B, were also analysed to ascertain the effect of Noise Levels on workers which gives the following: 24% High Blood Pressure, 39% Hearing Impairment, 22% Stressful, 19% Speech Interference and 31% Headache.

From both analysed Survey respondents, the Company A Gas Plant Noise Levels generated had a greater effect on industrial Workers compared to Company B. The study thus recommended the proper use of PPE to mitigate the menace of industrial noise pollution

1. INTRODUCTION

1.1 Background of the Study

The modern era has witnessed rapid industrialisation, spanning from the Industrial Revolution,which saw the advent of the steam engine and the mechanization of processes, to the era of artificial intelligence. Industries play a pivotal role in the life of modern human society [6]. This reliance on industries has its

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

shortfalls, raising environmental concerns such as ecological degradation, land, sea, and air pollution, noise pollution, etc. [5]. However, noise pollution seems to be the least of the concerns being mitigated against, especially in the developing world [7].

Noiseis defined as any unpleasant sound that interferes with one's physical and physiological state and well-being[10,12]. It is the most prevalent occupational hazard worldwide, with several billion workers exposed to levels exceeding 85dB(A) [1,3,11,12].

Studies have shown that continuous exposure to noise levels exceeding 85dB(A) could result in permanent loss of hearing, tinnitus, and difficulty in comprehending speech during noise[4,9]. Excessive exposure to noise pollution has also been found to be a leading cause of cardiovascular diseases, depression, anxiety, and loss of balance [2,4,8,12].

Considering the physical and mental health implications of noise on industrial work, this study is aimed at studying the exposure and effect of noise pollution on industrial workers in companies in Kwale, Delta State, Nigeria.

The specific objectives of this study are:

- To compare the level of Noise in Selected Company Workplaces with international standards.
- To ascertain the effects of Noise Levels on Industrial Workers
- To ascertain if there are appreciable differences in noise level between different workplaces of the selected company
- To suggest ways of mitigating the effects of Noise Pollution on Industrial workers.

Several studies have been conducted over time on the subject of noise pollution.

Ogbo and Nnodu [6] investigated noise pollution levels and the prevalence of hearing loss amongst workers in three major industries in Nnewi. They adopted a cross-sectional design in their study, using clinical diagnostic approaches and survey methodologies in assessing 71 industry workers with above five years of concurrent exposure to industrial noise. Their approach involved measuring ambient noise using sound level meters, measuring hearing acuity using Rinne and Weber tests, and structured questionnaires in collecting demographic data, noise exposure details, andthe level of PPE compliance. Their findings showed that industries A and/or B had noise levels averaging 96dB, which was significantly higher than industry C's 90 dB. PPE compliance was found to be inconsistent, with industry B showing the highest level of compliance. However, despite the exposure to such levels of noise, only one respondent exhibited signs of hearing loss. Their study highlighted the need for enhanced regulatory enforcement, modernization of industrial equipment, and improved PPE compliance [6].

In a study conducted by Ogbo et al.[7], an investigation was carried out to study the impact of noise pollution on the prevalence of high blood

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

pressure and abnormal pulse rate amongst workers in selected industries in Nnewi, Anambra State, Nigeria. Their research was based on 250 workers exposed to various levels of noise pollution. Blood pressure, pulse rate, and noise exposure data were collected and analyzed using descriptive and inferential statistics. Their findings revealed a significant connection between prolonged exposure to high noise levels and increased instances of high blood pressure and irregular pulse rates amongst the surveyed workers [7].

Taoussi et al. [12], conducted a study on the effect of noise exposure among industry workers in power plants of the national electricity company in N'Djamena, Chad. Their survey was conducted on 92 of the 800 workers in the power plant, with 88men and 4 women studied. Average noise levels of the machine rooms were measured to be 113.5 dB(A). The average duration of exposure was recorded to be 10.8-8.5 years. Regular PPE compliance was found to be at 85.9%. Of the respondents, 35 reported auditory fatigue, 30 reported tinnitus, hearing loss was reported in 14, headaches in 31, raised voice in 25, and insomnia in 13[12].

In the works of Saravanan et al. [10], the impact of noise pollution on human health at industrial site areas was studied. Their noise measurement and survey were conducted at concrete traverse, cement, iron and steel, and textile factories. A questionnaire was conducted on 256 workers in their study in order to determine the physical, physiological, and psycho-social effects of noise on humans. Their study determined that the noise levels detected in the studied industries were much above the 80dB(A) that is specified in the regulations. They found that 73.83% of the workers in these industries were disturbed by the noise in their workplace. 60.96% of the respondents had complaints of issues relating to nervous situations, 30.96% reported suffering from hearing problems, and only 10% of the respondents were found to be using some form of ear protection equipment [10].

In the works of Onuu and Akpan [8], industrial noise pollution assessment was carried out in 27 industries in South-Eastern Nigeria. This survey was conducted on 750 workers with working schedules of 6-12hours/day, over 5 working days, with a rate of exposure ranging from 0 seconds and 37.5 minutes. Their result showed noise exposure ratings exceeded 1 in over 20 of these industries. Their survey further revealed that most of the workers preferred that occupational noise pollution be greatly reduced owing to its effects on them. However, a few of the respondents indicated that they liked or enjoyed the occupational noise[8].

2. Materials and Methods

2.1 Materials

The following materials were used in collection of data; sound level meter, acoustic calibrator, tripod or mounting clamp, windshield, GPS, note pad

2.2 Study Area and Population

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

Kwale community located in Ndokwa West Local Government Area is also part of the Niger Delta.Kwale has an area of 268km^2 (103 sq. metre) and a population of 176,060 as at 2011. Notable Quarters in this community include Umusadege, Umusam, Umuseti, Umusadeli, Isumpe, Ogbeani, andAzunze.

2.3 Research Design

This study involved the collection of Noise Levels from Company A Gas Plant and Company B Oil & Gas Company in Kwale Delta State using an audiometer (Model HHSL402SD).The data were daily records of noise from Turbines 1, Turbines 2, Generator 1, Generator 2, Pipes Under the bridge to the Flare area, Pressure Valve at Flare area, Flare stack at Company A Gas Plant and Readings were taken from Generator 1, Generator 2, Compressor Unit 1, Compressor Unit 2 and Flare Stack at Company B Oil & Gas Company. These were collected separately. Data were collected during operational hours from 7&5 different locations within the operating plants using a Sound level meter.

The analysis of the Data to determine the noise levels and statistical Tools (ANOVA using Excel Data Analysis tools package) and Mean Deviation were used to derive the actual results to help determine a conclusive outline on the state of the Noise Levels and give necessary recommendations.

Secondary data was collected from the Internet, journals, OH&S Noise Level standards, and other literature regarding similar studies from various literature listed.

The designed questionnaire was given to 300 industrial workers of both companies, whose day-to-day activities exposed them to different industrial noise levels in the company. The questionnaire was geared towards areas such as: Noise exposure of the employees with YES or NO options; Sensitization of noise and protective hearing equipment; Age of workers and duration of service.

The total number of feedbacks collected was 245 questionnaires, which formed the basis of the questionnaire response analysis.

3. Result and Discussion

Results obtained from measurements of noise at companies A showed that the noise levels over-time measured at Turbine 2 area in Company A, as shown in Fig. 1 varied between 82.6dB(A) to 93.7dB(A)with mean deviation of 82.6 $\pm$ 2.9 with an Leq value of 73.9dB(A). Measured noise levels at the Turbine 1 area of Company A, as shown in Fig. 2, varied between 80.1dB(A) to 92.0dB(A) with a mean deviation of 87.4$\pm$2.9, with aLeq value of 71.4dB(A).The noise levels overtime measured at Generator 1, as shown in Fig. 3, varied between 80.62dB(A) to 92.32dB(A) with a mean deviation of 87.9 $\pm$ 2.9 with a Leq value of 72.0dB(A). Also, the noise levels overtime measured at Generator 2, as shown in Fig. 4, varied between 82.08dB(A) to 93.98dB(A) with a mean deviation of 89.4 $\pm$ 2.9 with aLeq value of 73.4dB(A). According to OH&S

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

Nigerian Journal of Engineering, Technology, Science and Environment; 01 (2025): 2493-4671
NIGERIAN JOURNAL OF ENGINEERING, TECHNOLOGY, SCIENCE AND ENVIRONMENT
Journal homepage: www.njetse.dsust.edu.ng

Standards, exposure to these levels of noise over a period greater than 8 hours/day is harmful. This indicates that the workers inthese areas are exposed to a high level of noise pollution.

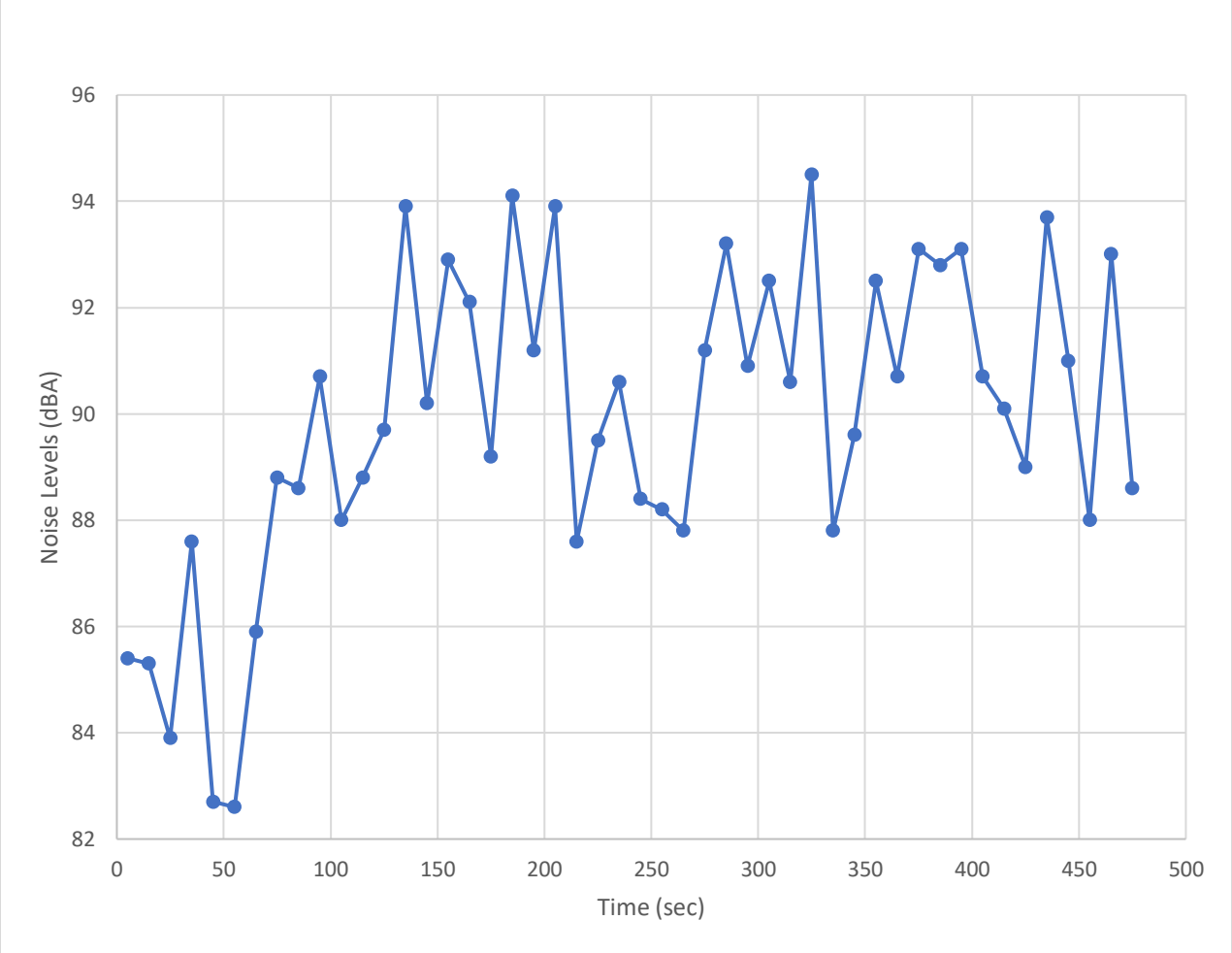


Fig.1: Company A Turbine 2 Area Noise Level

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

Nigerian Journal of Engineering, Technology, Science and Environment; 01 (2025): 2493-4671

NIGERIAN JOURNAL OF ENGINEERING, TECHNOLOGY, SCIENCE AND ENVIRONMENT

Journal homepage: www.njetse.dsust.edu.ng

.

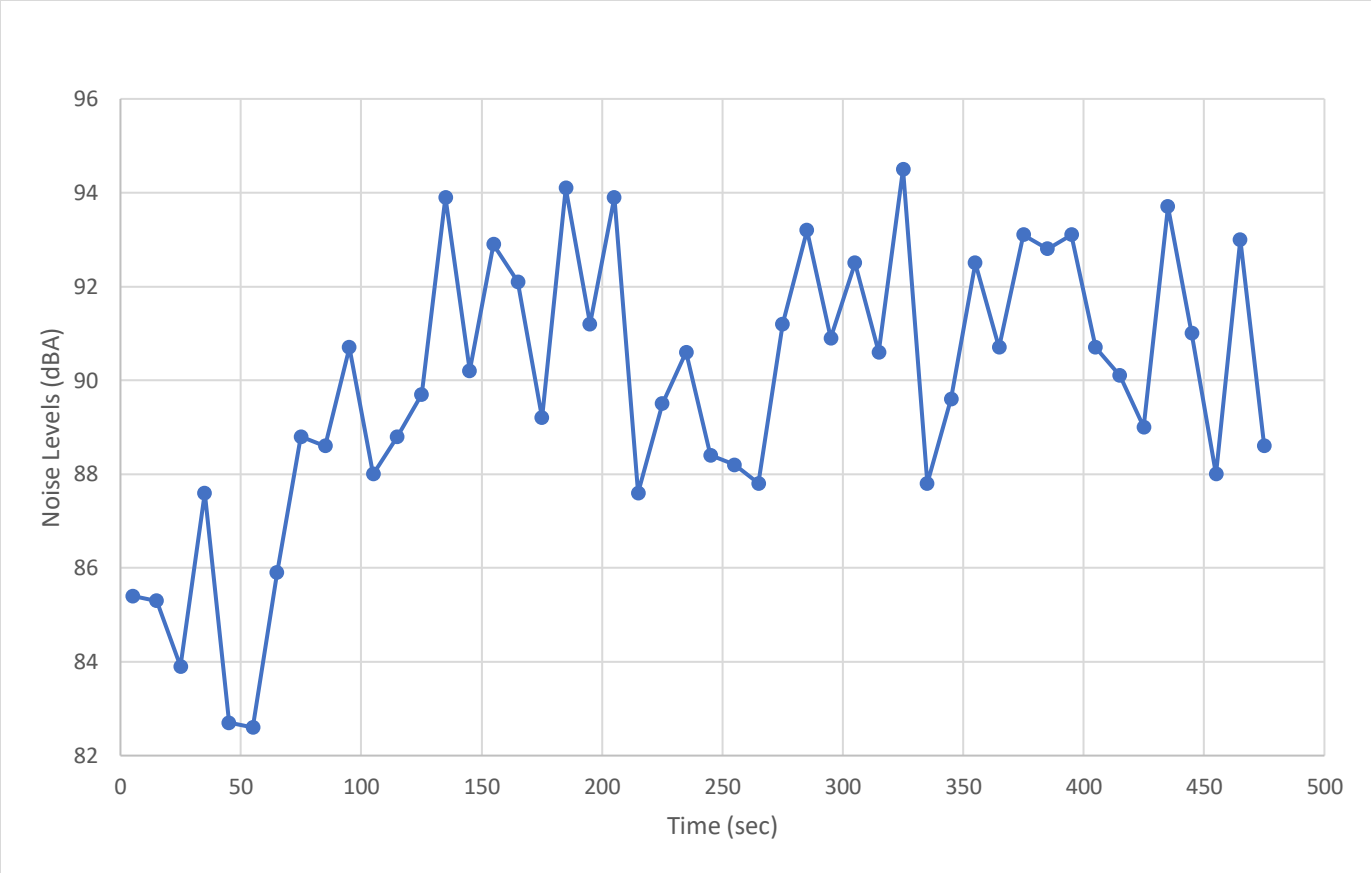


Fig. 2: Company A Turbine 1 Area Noise Level

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

Nigerian Journal of Engineering, Technology, Science and Environment; 01 (2025): 2493-4671

NIGERIAN JOURNAL OF ENGINEERING, TECHNOLOGY, SCIENCE AND ENVIRONMENT

Journal homepage: www.njetse.dsust.edu.ng

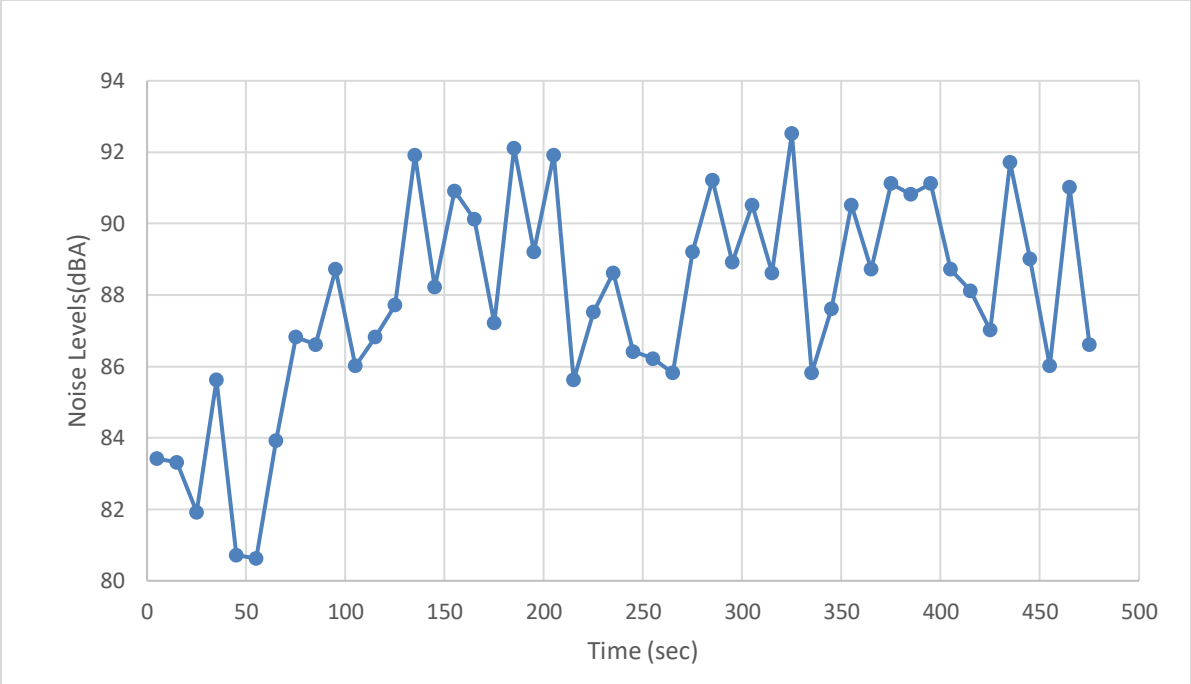


Fig. 3: Company A Generator 1Area Noise Level

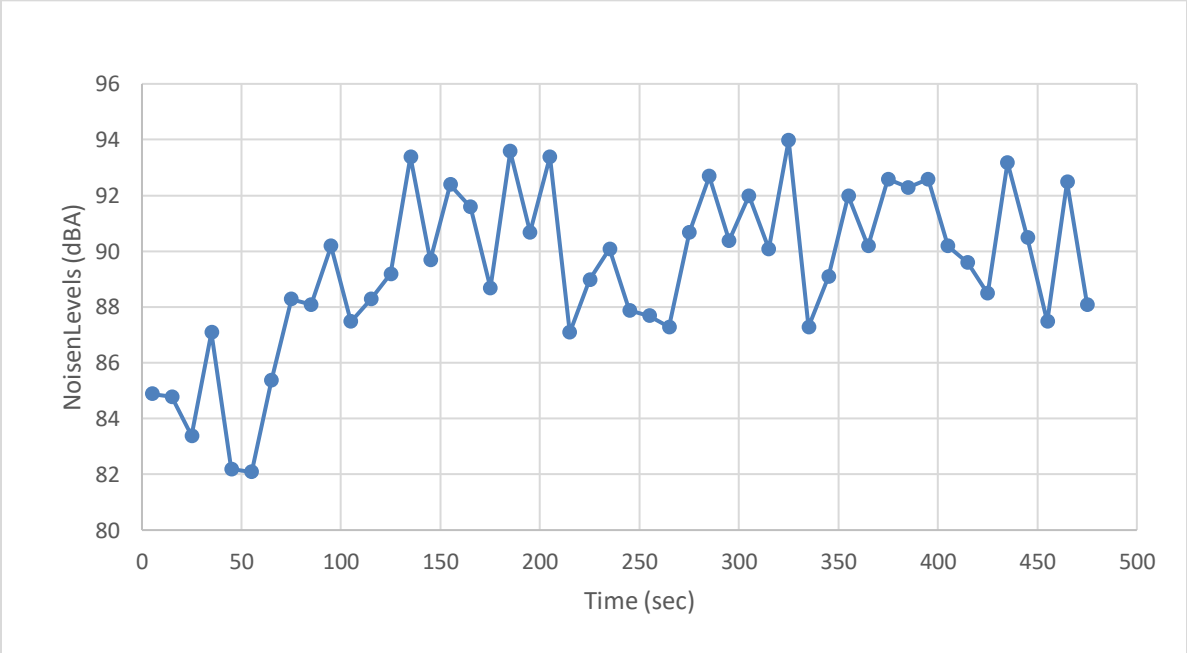


Fig. 4: Company A Generator 2 Area Noise Level

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

Nigerian Journal of Engineering, Technology, Science and Environment; 01 (2025): 2493-4671

NIGERIAN JOURNAL OF ENGINEERING, TECHNOLOGY, SCIENCE AND ENVIRONMENT

Journal homepage: www.njetse.dsust.edu.ng

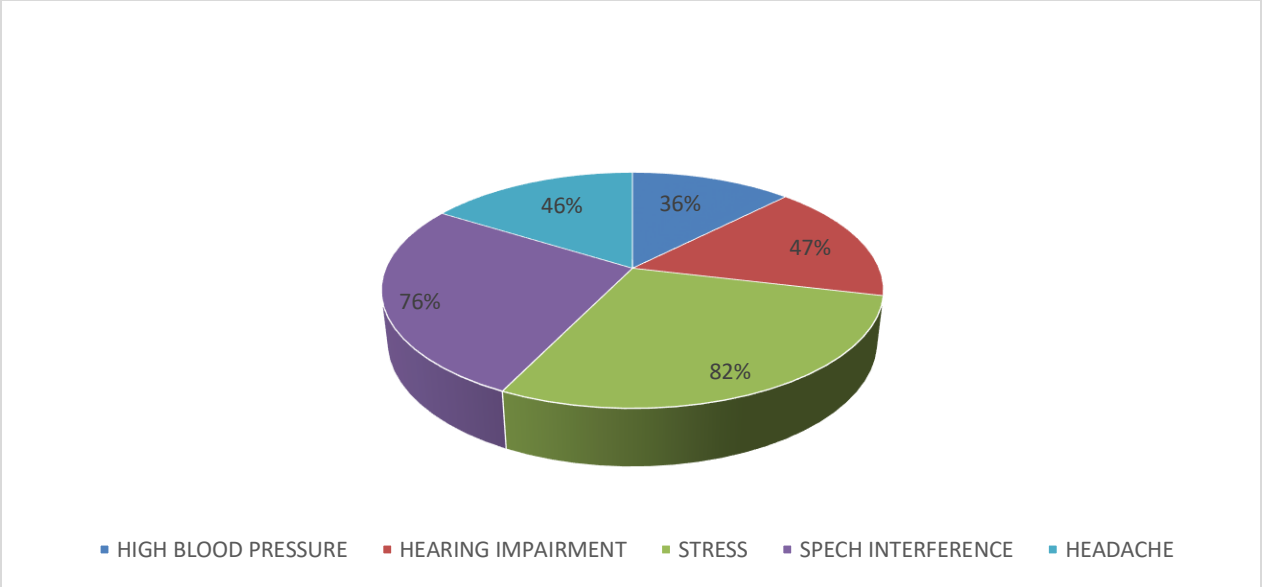


Fig. 5: Effects of Noise Generated from Questionnaire

Analysis

Analysis drawn from the Respondent's Questionnaires in Company A Gas Plant, as illustrated in Fig. 5, shows that workers are suffering from the effects of noise pollution as shown above. This could have been due to alack of or wrong use of PPE by the workers, and poor supervision of workers on duty etc. A survey on the use of PPE (ear muffs) by workers showed a combined percentage of 62% of workers (Fig. 6) agreed to not knowing how to correctly use ear muffs, while a combined percentage of 68% of workers (Fig.7) reported not being comfortable with the use of ear muffs.

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

Nigerian Journal of Engineering, Technology, Science and Environment; 01 (2025): 2493-4671

NIGERIAN JOURNAL OF ENGINEERING, TECHNOLOGY, SCIENCE AND ENVIRONMENT

Journal homepage: www.njetse.dsust.edu.ng

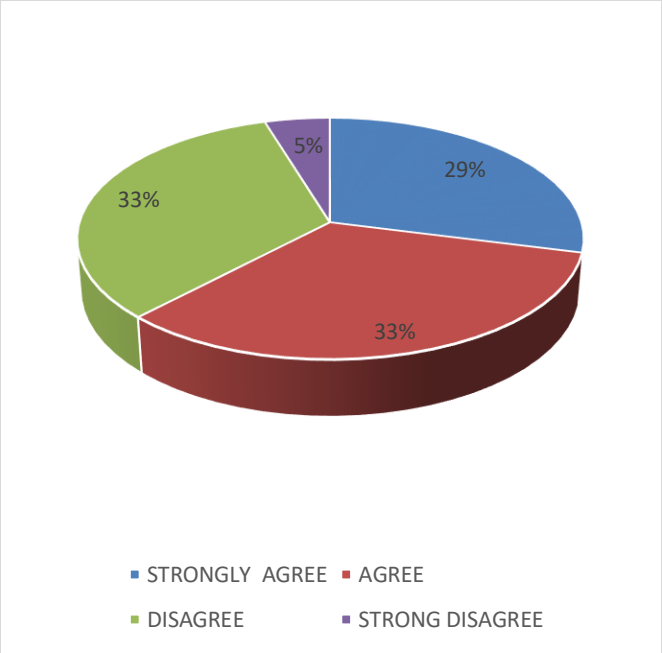


Fig. 6: Workers that do not know how to use Ear Muff Correctly

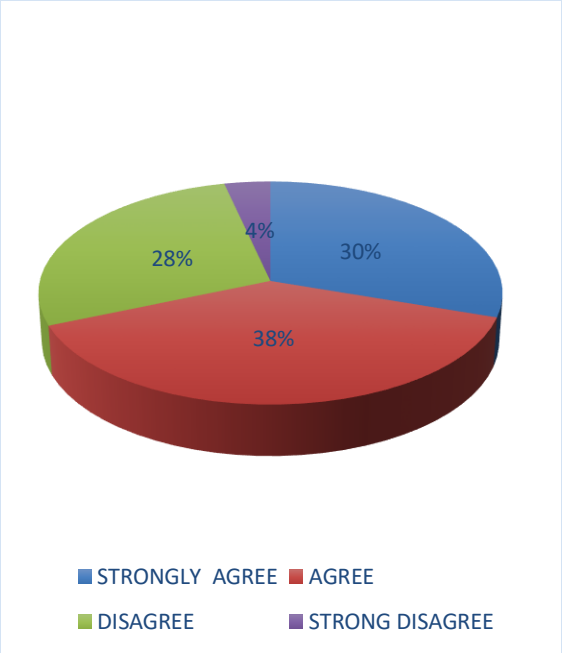


Fig 7: Workers Uncomfortable with the use of Ear Muff

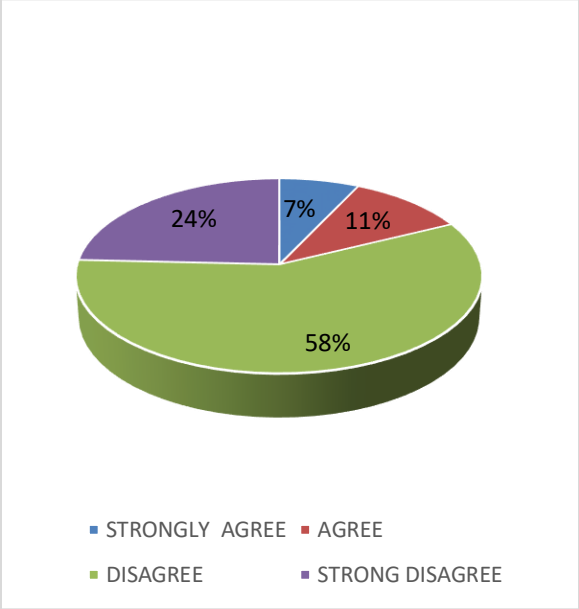


Fig. 8: Workers Comfortable with the Use of Ear Muff

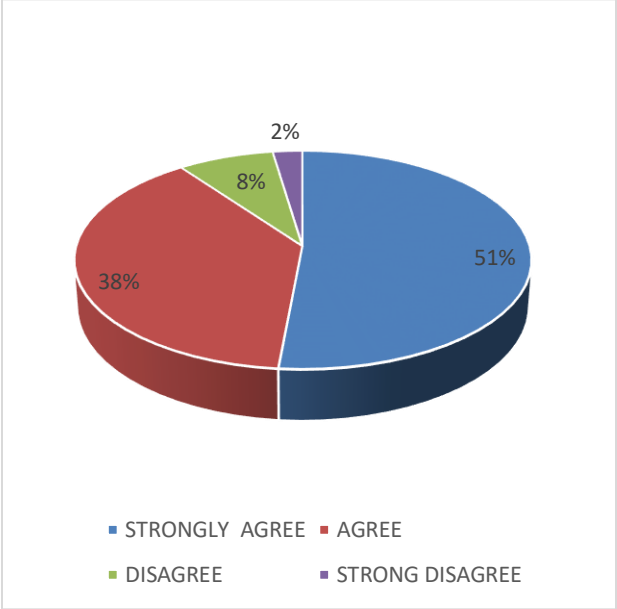


Fig. 9 Workers Adhering to Correct Use of Ear Muff

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

Nigerian Journal of Engineering, Technology, Science and Environment; 01 (2025): 2493-4671

NIGERIAN JOURNAL OF ENGINEERING, TECHNOLOGY, SCIENCE AND ENVIRONMENT

Journal homepage: www.njetse.dsust.edu.ng

At Company B, the noise levels over time measured at Generator 1,as shown in Fig. 10, varied between 65.80dB(A) to 96.1dB(A) witha mean deviation of 85.58 ± 6.69 with aLeq value of 74.9dB(A). The Generator 2, noise level measured as shown in Fig. 11, varied between 70.80dB(A) to 94.10dB(A) with a mean deviation of 82.53 ±7.48 with aLeq value of 79.1dB(A). At Turbine 2, the noise levels measured over time were found to vary between 69.5dB(A) to 91.90dB(A) with a mean deviation of 86.20 ± 5.17 with a Leq value of 79.7dB(A) as shown in Fig. 12. That measured at Compressor Unit 2 over-time was found to vary between 81.9dB(A) to 93.40dB(A) with mean deviation of 87.57 ± 2.94 with a Leq value of 81.1dB(A) as shown in Fig. 13.

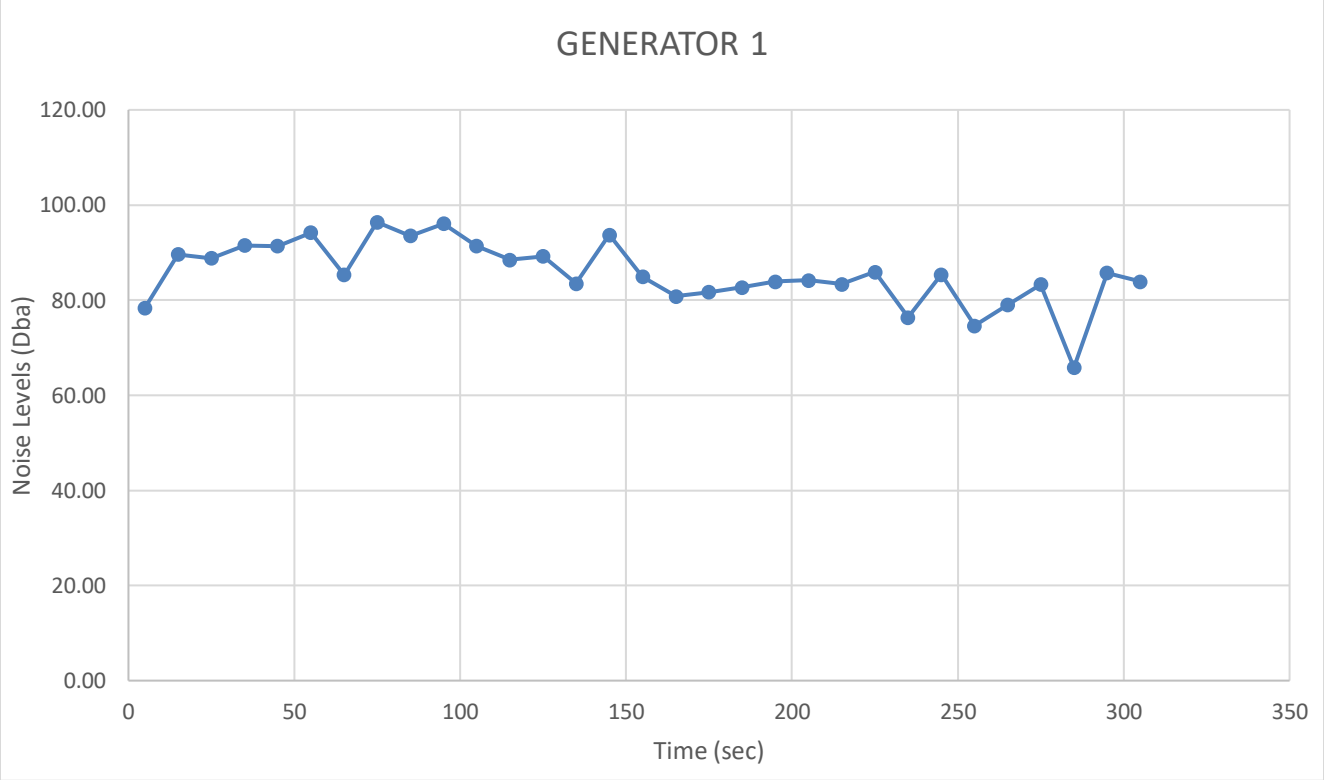


Fig. 10: Company B Generator 1 Area Noise Level

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

Nigerian Journal of Engineering, Technology, Science and Environment; 01 (2025): 2493-4671

NIGERIAN JOURNAL OF ENGINEERING, TECHNOLOGY, SCIENCE AND ENVIRONMENT

Journal homepage: www.njetse.dsust.edu.ng

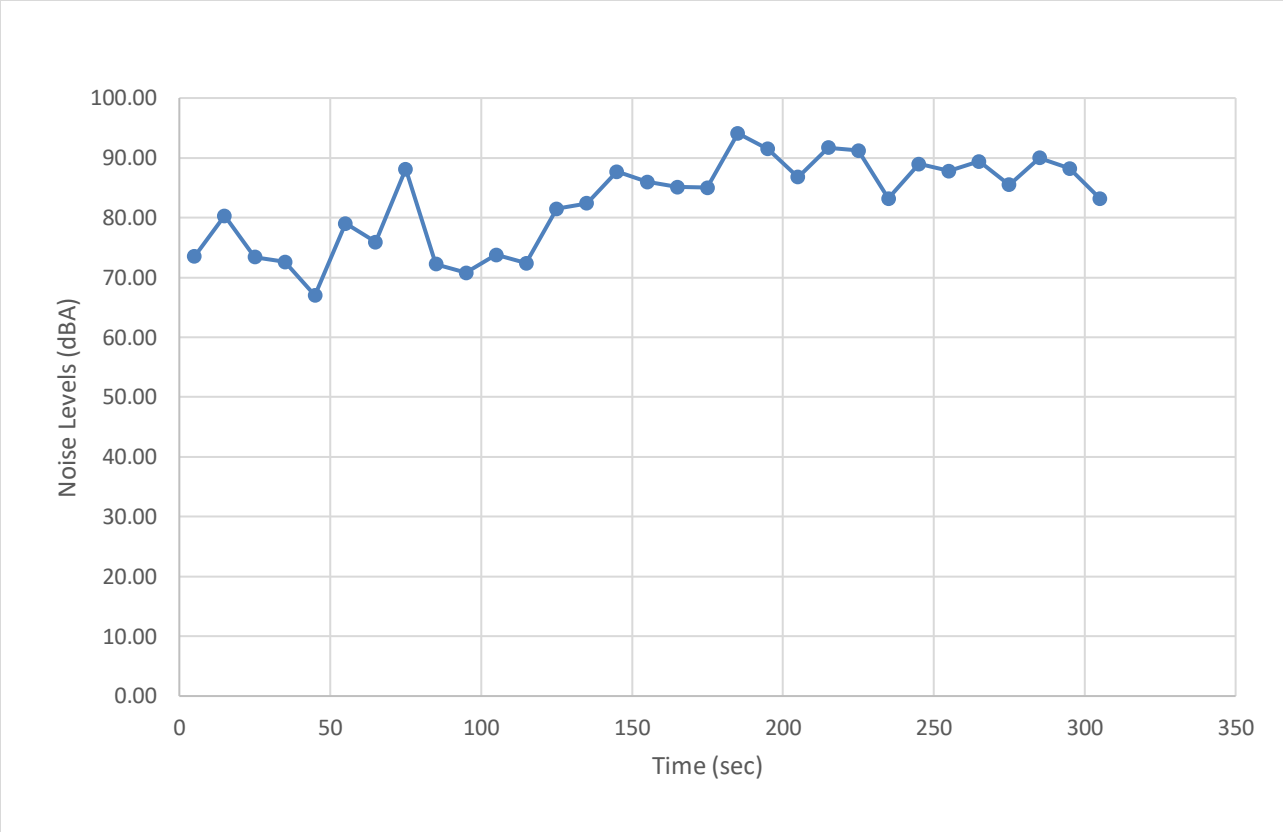


Fig. 11: Company B Generator 2 Area Noise Level

The noise levels over-time measured at Generator 2 varied between 70.80dB(A) to 94.10dB(A) with mean deviation of 82.53 ± 7.48 with a Leq value of 79.1dB(A). According to OH&S Standards, exposure to this level of noise over a period greater than 8hrs/day is harmful. This indicates that the workers at Generator 2 area are exposed to high level of noise pollution. The undulating noise levels as shown on the graph depends on the loading of the machine. According to OH & S Standards, exposure to this level of noise over a period greater than 8hrs/day is harmful. This indicates that the workers at Company B area are exposed to high level of noise pollution. The undulating noise levels as shown on the graph depends on the loading of the machines.

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

Nigerian Journal of Engineering, Technology, Science and Environment; 01 (2025): 2493-4671

NIGERIAN JOURNAL OF ENGINEERING, TECHNOLOGY, SCIENCE AND ENVIRONMENT

Journal homepage: www.njetse.dsust.edu.ng

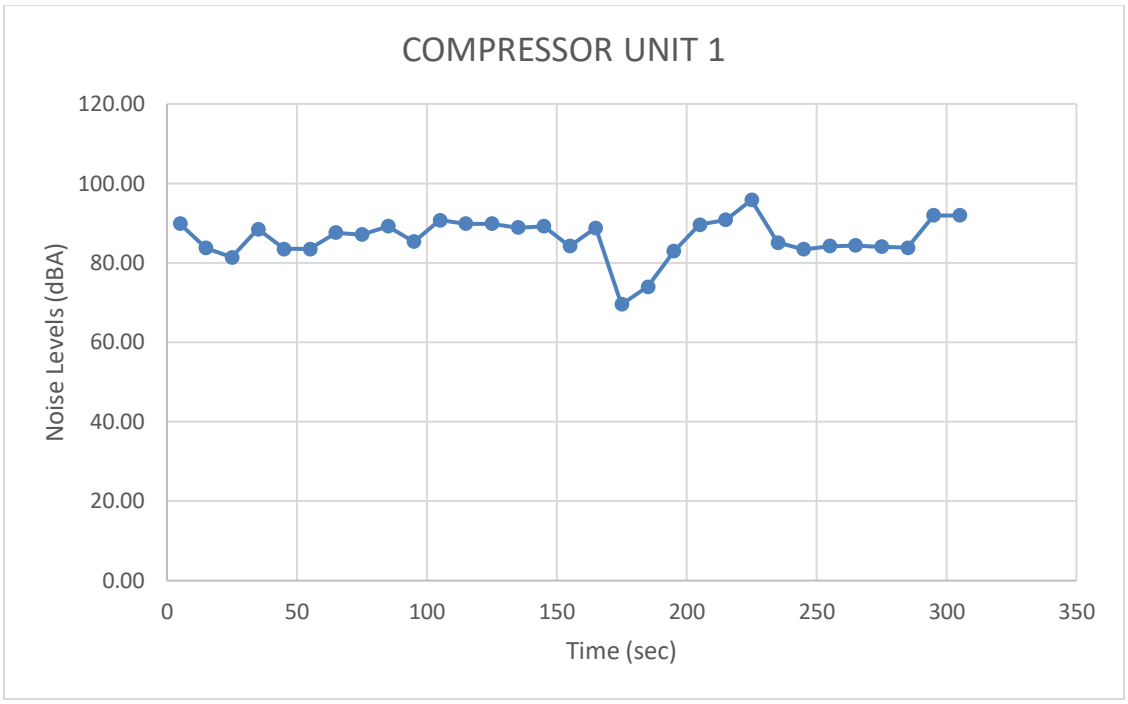


Fig. 12: Company B Compressor Unit 1 Area Noise Level

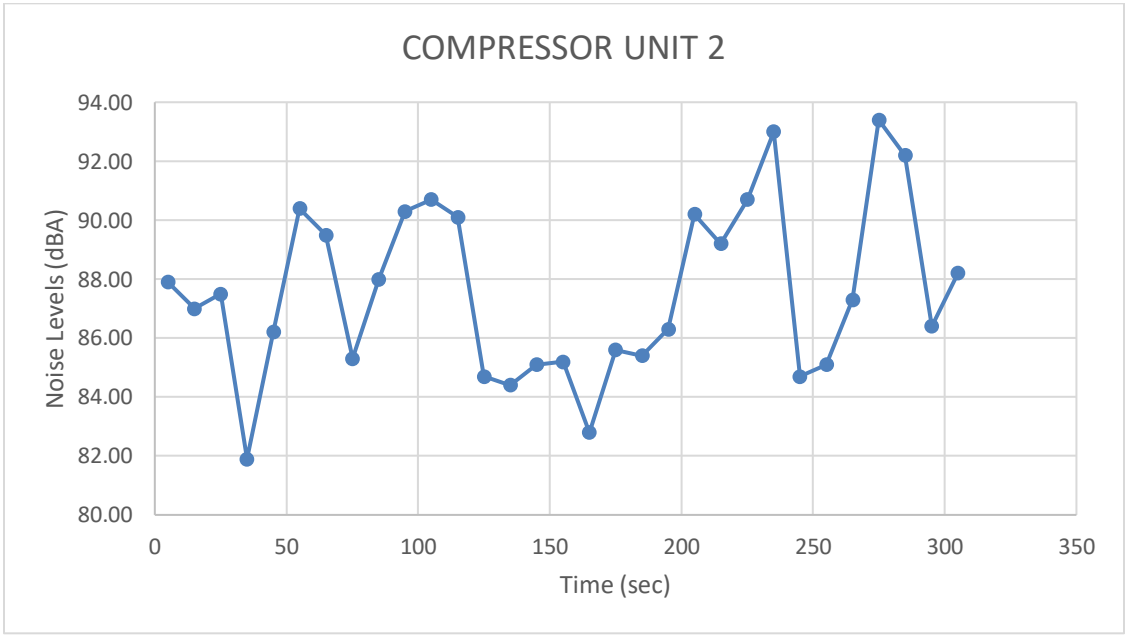


Fig. 13: Company B Compressor Unit 2 Area Noise Level

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

Nigerian Journal of Engineering, Technology, Science and Environment; 01 (2025): 2493-4671
NIGERIAN JOURNAL OF ENGINEERING, TECHNOLOGY, SCIENCE AND ENVIRONMENT
Journal homepage: www.njetse.dsust.edu.ng

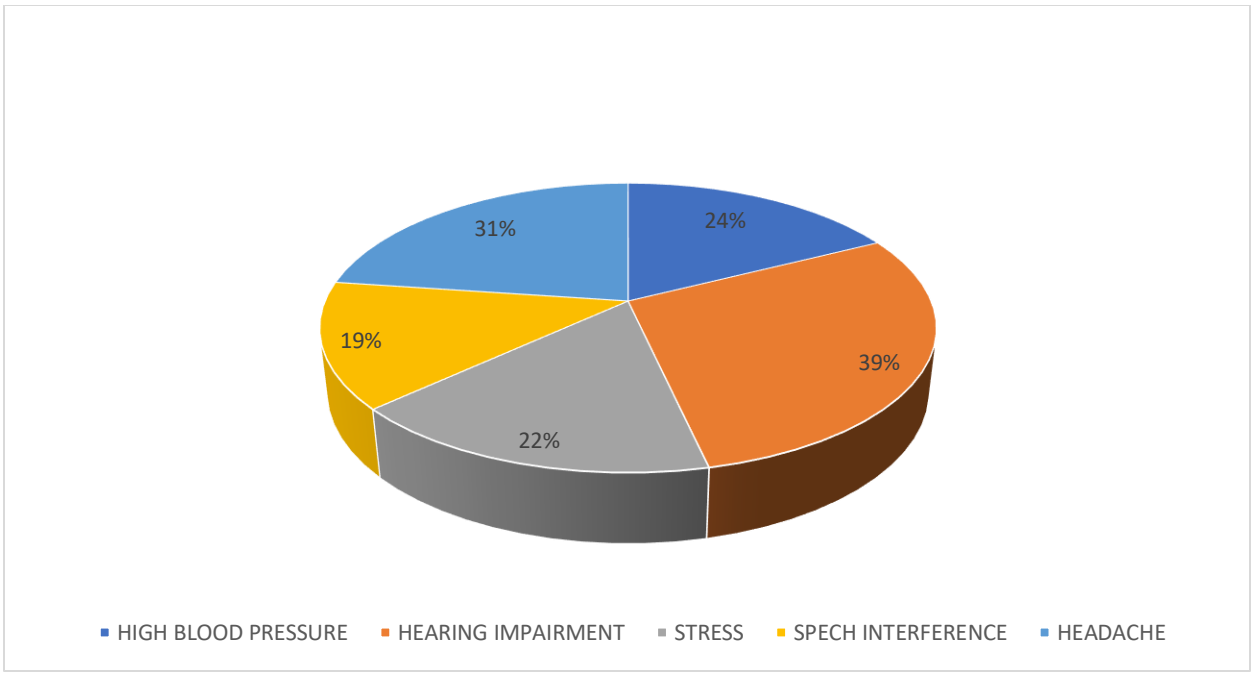
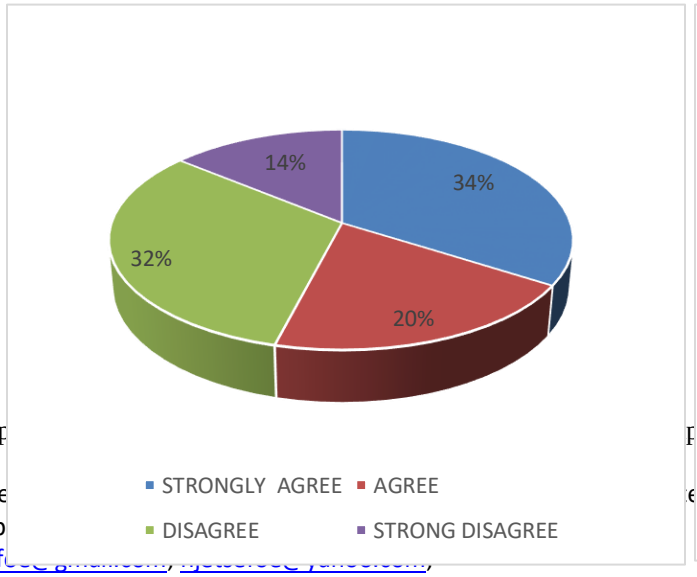
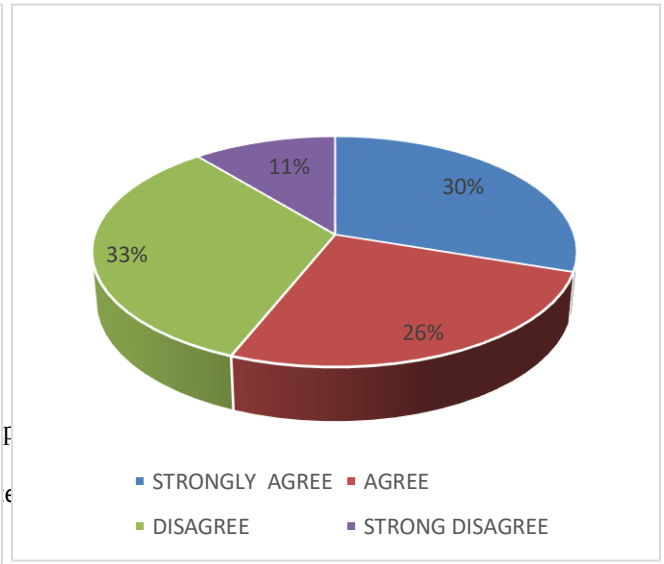


Fig. 4.14: Effects of Noise Generated from Questionnaire Survey

Analysis drawn from Respondent's Questionnaires in Company B, Fig.4.14 shows that workers are suffering from the effects of Noise Pollution as shown above. This could have been due toa lack of or wrong use of PPE by the workers, and poor supervision of workers on duty, etc. Survey on the use of PPE (ear muffs) by workers showed a combined percentage of 54% of workers (Fig. 15) agreed to not knowing how to correctly use ear muffs, while a combined percentage of 56% of workers (Fig.16) reported not being comfortable with the use of ear muffs



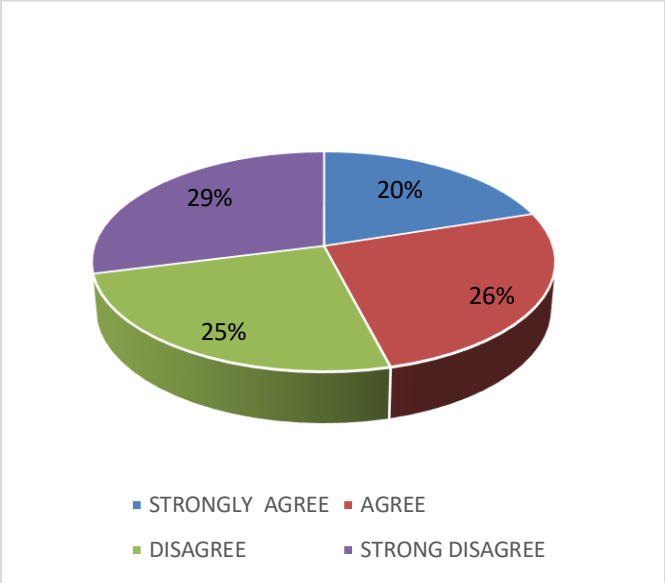


Corresp
Receive
Availab
njetsef

Nigerian Journal of Engineering, Technology, Science and Environment; 01 (2025): 2493-4671
NIGERIAN JOURNAL OF ENGINEERING, TECHNOLOGY, SCIENCE AND ENVIRONMENT
Journal homepage: www.njetse.dsust.edu.ng

Fig. 15: Workers That do not Know How to Use Ear Muff Correctly

Fig. 16: Workers Uncomfortable with the Use of Ear Muff



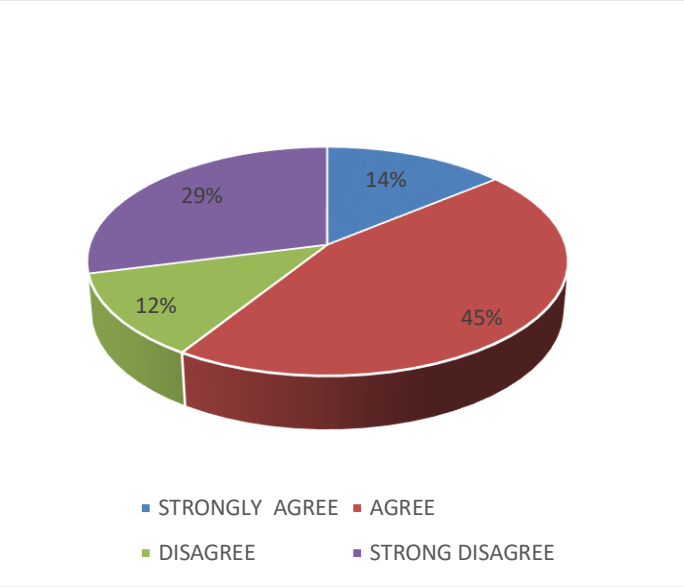


Fig. 17: Workers Comfortable with the Use

Fig. 18: Workers Adhering to Correct Use of Ear Use of Ear MuffMuff

Conclusion

Two different companies with seven (7) and five (5) locations respectively, were being investigated concerning noise levels generated independently with the use ofa Sound Level Meter.Readings were collected at 10 seconds intervals and Questionnaires were distributed. The results from the Sound Level Meter were analysed independently which depicts that all the different Noise Levels generated in the respective locations are harmful to the industrial Workers as majority are being exposed to an average of 12h/d daily and this poses as a great danger to their Health. Also, the respondent of Survey Questionnaire of Company A Gas Plant were analysed to ascertain the effect of Noise Levels on workers which gives the following: 36% High Blood Pressure, 47% Hearing Impairment, 82% Stressful, 76% Speech Interference and 46% Headache. The respondent of Survey Questionnaire of Company B, were also analysed to ascertain the effect of Noise Levels on workers which gives the following: 24% High Blood Pressure, 39% Hearing Impairment, 22% Stressful, 19% Speech Interference and 31% Headache. From both analysed Survey respondents, theCompany A Gas Plant Noise Levels generated had a greater effect on industrial Workers compared to Company B.

Reference

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

[1] Anjorin, S. A., Jemiluyi, A. O., & Akintayo, T. . (2015). Evaluation of Industrial Noise: A Case Study of Two Nigerian Industries. *European Journal of Engineering and Technology*, *3*(6), 1–16.

[2] Buksh, N., Nargis, Y., Yun, C., He, D., & Ghufran, M. (2018). Occupational Noise Exposure and its Impact on Worker's Health and Activities. *International Journal of Public Health and Clinical Sciences*, *5*(2), 180–195.

[3] Ibrahim, I. B., Aremu, A. S., Ajao, K. R., & Ojelabi, A. T. (2014). Evaluation of Noise Pollution and Effects on Workers during Wheat Processing. *Journal of Applied Science Enironmental Management*, *18*(4), 599–601.

[4] Lai, A.-J., & Huang, C.-Y. (2019). Effect of Occupational Exposure to Noise on the Health of Factory Workers. *Procedia Manufacturing*, *39*(2019), 942–946. https://doi.org/10.1016/j.promfg.2020.01.395

[5] Maqsood, N., Younes, I., & Nasar-u-Minallah, M. (2019). Industrial Noise Pollution and Its Impact on the Hearing Capacity of Workers : A Case Study of Gujranwala City , Pakistan. *International Journal of Economic Environmental Geology*, *10*(2), 45–49.

[6] Ogbo, O. G., Nnodu, V. C., & Onuoha, D. C. (2024). The Effects of Noise Pollution on the Prevalence of Hearing Loss on Workers in Select Industries in Nnewi , Anambra State. *International Journal of Research and Innovation in Social Science*, *8*(3), 1932–1944. https://doi.org/10.47772/IJRISS

[7] Ogbo, O. G., Onuoha, D. C., Okonkwo, U. C., & Amaechi, M. (2024). The Effects of Noise Pollution on the Prevalence of High Blood Pressure and Abnormal Pulse Rate on Workers in select Industries in Nnewi. *International Journal of Environment and Pollution Research*, *12*(2), 58–74.

[8] Onuu, M. U., & Akpan, A. O. (2018). Industrial Noise in Nigeria : Measurements , Analysis , Dose and Effects. *Nuilding Acoustics*, *13*(1), 69–80. https://doi.org/10.1260/135101006776324879

[9] Panhwar, M. A., Memon, D. A., Bhutto, A. A., & Jamali, B. Q. (2018). Impact of Noise Pollution on Human Health at Industrial SITE Area Hyderabad. *Indian Journal of Science and Technology*, *11*(31), 1–6. https://doi.org/10.17485/ijst/2018/v11i31/130436

[10] Saravanan, S., Saravanakumar, S., & Surender, B. (2022). Impact of Noise Pollution on Human Health at Industrial Site Areas. *International Advanced Research Journal in Science, Engineering and Technology*, *9*(5), 500–510.

[12] Schokry, A. (2015). Evaluation of Noise Levels in Different Industrial Sectors within the Gaza

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;

Please cite this article as: Ekpe et al. (2025). Noise pollution on Industrial Workers: A Case Study of Some Companies in Delta State. NJETSE, Vol. 1(02), (2025)

Strip: A Pilot Study. *Journal of Materials Science and Engineering*, *5*(1), 209–215. https://doi.org/10.17265/2161-6213/2015.5-6.003.

[13] Taoussi, A. A., Yassine, A., Seïd, M., Malloum, M., Assi, C., Fotclossou, T., & Ali, Y. A. (2022). Effects of Noise Exposure Among Industrial Workers in Power Plants of the National Electricity Company in N ' Djamena, Chad. *The Egyptian Journal of Otolaryngology*, *38*(63), 1–6. https://doi.org/10.1186/s43163-022-00253-7

Corresponding Author: *Email address*: ***ishiomajonek@gmail.com*** **(**Ekpe, I)

Received 10 May 2025, Received in revised from 15 June 2025, Accepted 22 June 2025
Available Online 10-07- 2025
njetsefoe@gmail.com; njetsefoe@yahoo.com;