



# NOISE LEVELS AND USE OF EAR PROTECTORS IN HYDRAULIC AND MANUAL STEEL PRESSING LABOR AT CV. MEDAN CITY SUMATRA STEEL IN 2022

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## Article Info

### Article history:

Received : 10 October 2022

Revised : 19 Nopember 2022

Accepted : 09 December 2022

### Keywords:

Noise, PPE, Steel Pressing

## ABSTRACT

*With the growth of the industry, it is increasingly encouraging the emergence of environmental problems, namely the increasing level of exposure to noise (TWA - Time Weighted Average) both in the work environment and in the surrounding environment, especially from the sound of production machines which can cause hearing loss and communication work accidents caused by two groups, namely, human actions that do not meet the requirements of a healthy life and unsafe environmental conditions. 80-85% of work accidents are caused by negligence or human error. Existing human factors generally affect PPE on the grounds that the use of PPE is considered to interfere with work and has a less protective effect. Continuous noise is noise that occurs continuously and is not interrupted. In the CV Baja Sumatra industry, pressing activities are often carried out and emit continuous noise. The aim is to describe the use of ear protection devices in the workforce and measure noise levels in the steel pressing section as well as review the impact on workers, and seek information about worker health benefits. As input for workers about the importance of wearing ear protection and the dangers of noise.*

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## 1. INTRODUCTION

Noise is all unwanted sounds originating from production process tools and/or work tools which at a certain level can cause hearing loss. A workplace that has a source of noise hazard is a workplace that has a continuous, intermittent, impulsive, and recurring noise source (Regulation of the Minister of Manpower of the Republic of Indonesia No. 5 of 2018).

Noise can cause a hazard to the health of workers because it is influenced by the length of time a person is exposed to noise. Someone will not experience health problems from noise if it does

not exceed the threshold value. According to Regulation of the Minister of Manpower No. 5 of 2018 concerning the Work Environment, the threshold value is a standard for hazardous factors in the workplace as a time-weighted average intensity level that workers can receive without causing illness or health problems, in daily work for no more than 8 hours a day or 40 hours a week. The noise threshold value according to the regulations in question is 85 dB.

With the growth of the industry increasingly encouraging the emergence of environmental problems, namely the increasing level of exposure to noise (TWA - Time Weighted Average) both in the work environment and in the surrounding environment, especially from the sound of production machines which can cause hearing and communication disorders. At 85 dBA noise, workers are allowed to be exposed for 8 hours per day or 40 hours per week. (Ministry of Health, 2016) Noise can have an auditory impact (hearing threshold disturbance) and non-auditory impact (communication disorder, threat of safety hazard, decreased work performance, stress and fatigue). The main effect of noise on health is damage to the sense of hearing which leads to deafness [1]

The most common physical pollutant is noise. Noise in the environment can come from the sound of motorized vehicles, the sound of industrial machines and so on. Decree of the State Minister for the Environment No: Kep48/MENLH/11/1996 concerning Noise Level Standards states that noise is unwanted sound from a business or activity at a certain level and time which can cause disturbances to human health and environmental comfort [2].

To realize the quality of the health of the industrial work environment, it is necessary to set Threshold Values (NAB), Biological Exposure Indicators (IPB), and Quality Standards (SBM), as well as work environment health requirements for the health industry for workers, especially the sense of hearing. Activities are carried out at CV. Sumatran steel with working environmental conditions during the process, using OSHA (Occupational Safety and Health Act) standards.

Work accidents are caused by two groups, namely, human actions that do not meet the requirements of a healthy life and unsafe environmental conditions. 80-85% of work accidents are caused by negligence or human error. Existing human factors generally affect PPE on the grounds that the use of PPE is considered to interfere with work and has a less protective effect.[3]

## **2. RESEARCH METHODE**

The research was conducted at CV. Baja Sumatra and the time of the research was carried out starting from March - October 2022. Primary data was obtained directly, namely giving questionnaires to workers, namely to find out the use of ear protection and measuring noise levels using a sound level meter. Secondary data was obtained from company leaders at CV. Baja Sumatra in the form of an overview of the company in the steel pressing section and the number of employees. Data obtained manually and presented in the form of tables and narratives. The results obtained are compared with the existing theory to get a clear picture of the level of noise quality standards.

## **3. RESULT AND ANALYSIS**

CV. Baja Sumatra electric welding workshop is one type of informal sector business in the field of welding with the address location, Jl. Bangun Sari No. 12 Medan Kel. Durian Shop, Medan, Johor District. District, Medan, Johor. The electric welding workshop in the Pressing Welding Industrial Estate has 1-4 employees aged between 18-60 years. The production process of CV Baja Sumatra consists of the process of cutting raw materials, assembling, welding, grinding, sanding and painting. In the welding process there were 30 people but the number of samples studied in this study were 26 respondents who were selected based on predetermined criteria. In

a day the production process lasts for 8 hours with 1 break time, but this does not rule out the possibility of additional working hours or overtime. Welding construction is now increasingly in demand by the public, so that the implementation of welding work is also increasing. This increase in work volume is at risk of increasing work accidents.

From the results of measurements carried out in the work environment in the CV. Baja Sumatra industry, 1 sample point was measured. And the measurements were carried out 2 times, namely in the morning and in the evening, then the results of each measurement were entered in the table. Some possible consequences can cause a decrease in the hearing function of workers exposed to a noisy environment, namely the high intensity of noise resulting from the activity process.

### Use of PPE (Personal Protective Equipment)

Table of Use of PPE, Length of Time Exposure to Noise, Hearing Impaired in the CV Baja Sumatra Industry in Medan in 2022

No	Variabel	Jumlah (n)	Persentase (%)
1.	Penggunaan APD		
	Menggunakan	8	30,8
	Tidak Menggunakan	18	69,2
	<b>Jumlah</b>	<b>26</b>	<b>100</b>
2.	Lama Terpapar		
	Kebisingan		
	1 jam	8	30,8
	2 jam	4	15,3
	3 jam	4	15,3
	4 jam	10	38,6
	<b>Jumlah</b>	<b>26</b>	<b>100</b>
3.	Gangguan Pendengaran		
	Mengalami	18	69,2
	Tidak Mengalami	8	30,8
	<b>Jumlah</b>	<b>26</b>	<b>100</b>

Based on the table, it is known that 18 employees (69.2%) did not use ear protection, and did not use PPE. 10 employees (38.6%) were exposed to noise for 4 hours for a long time, and 18 employees (69.2%) had hearing loss. ). 8 employees (30.8%) did not experience hearing loss because they used PPE 8 employees and the exposure time was 1 hour. The type of noise at this location is continuous noise where the noise that occurs is relatively constant as long as the noise source is running. This is caused by the sound produced by production activities by cutting steel during the activity process. The results of noise measurements show that the noise value does not meet the requirements

Table of Noise Level Measurement Results in the CV.X Industry in Medan in 2022

Waktu Pengukuran	Hasil Pengukuran (dB)
Pagi hari (I)	120,25 Db
Sore hari (I)	106,8 Db
Pagi hari (II)	116,2 Db

**Sore hari (II)**

107,5 Db

Complaints of subjective hearing loss are often felt by workers without seeing from. 12 Results of interviews with hearing loss complaints, 34.3% of respondents had hearing complaints and 65.7% of respondents did not have hearing complaints. As many as 14 respondents felt that their hearing was better during holidays/off/off work

**4. CONCLUSION**

Based on the results of the analysis using the chi square statistical test, the value of  $P = 0.745$  was obtained. Thus there is no relationship between age and hearing loss complaints. In this case, it can be interpreted that a decrease in the hearing threshold due to noise is not related to the age of the worker.  $r = 0.445$ . The incidence of hearing loss is more common in young workers compared to old age.

Based on statistical tests, the value of  $p = 0.01$  was obtained for the variable hearing loss with noise. So these variables have a significant relationship, while the hearing loss variable with age does not find a relationship because the value of  $p = 0.35$ .

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