

## Occupational Health and Safety Management System Emergency Response to Noise at LRT South Sumatra

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**Abstrak:** Pada pekerjaan ada beberapa faktor yang perlu diperhatikan pada kesehatan dan keselamatan kerja. Pada faktor fisika, biologi, kimia, psikologi hingga ergonomi. Salah satu faktor kesehatan dan keselamatan kerja yaitu faktor fisika yaitu kebisingan. Kebisingan merupakan bunyi atau suara yang ditimbulkan yang tidak kehendaki yaitu pada bising derit. Berdasarkan hasil penelitian insulasi kebisingan interior pada kecepatan kereta LRT 500-2000 Hz didapatkan 89,4 – 96,3 dBA sedangkan NAB kebisingan yang diperbolehkan untuk manusia yaitu sebesar 85 dBA dan NAB maksimum kebisingan pada kereta adalah 80 dBA. Metode yang digunakan dalam penelitian ini adalah survey lapangan untuk pengambilan sampel kebisingan menggunakan sound level meter SM-20-A, Setelah pengambilan sampel, peneliti melakukan analisis dengan metode univariat terhadap masing-masing variabel independen dan dependen yang dilakukan di 13 stasiun LRT Sumsel. LRT melewati setiap tikungan dengan tingkat kebisingan mencapai 100 dB (>85 dB), tidak memenuhi standar NIOSH di setiap tikungan. Pada kriteria CA2 merupakan kasus yang paling dominan dengan tingkat tertinggi pada setiap kriteria khususnya pada kasus kebisingan, oleh sebab itu karyawan atau petugas seharusnya menggunakan APD jika berada pada area tikungan ataupun pada saat kereta melintas.

**Abstract:** At work there are several factors that need to be considered in occupational health and safety. On physical factors, biology, chemistry, psychology to ergonomics. One of the factors of occupational health and safety is the physical factor of noise. Noise is a sound or sound that is generated that is not wanted, namely the squeaky noise. Based on the results of interior noise insulation research at LRT train speeds of 500-2000 Hz, 89.4 - 96.3 dBA was obtained while the allowable noise NAB for humans was 85 dBA and the maximum noise NAB on the train was 80 dBA. The method used in this study is a field survey for noise sampling using the SM-20-A sound level meter. After sampling, researchers analyzed the univariate method for each independent and dependent variable conducted at 13 South Sumatra LRT stations. LRT passes through each bend with noise levels reaching 100 dB (>85 dB), not meeting NIOSH standards at each bend. In CA2 criterion is the most dominant case with the highest level in each criterion, especially in the case of noise, therefore employees or officers should use PPE if they are in the bend area or when the train passes .



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### INTRODUCTION

MERP (Medical Emergency Response Plan) is a system that combines several departments including HRD, security, health, including K3 (occupational safety and health) itself to deal with incidents involving employees. The environment is a part of

human life that must be protected so that it can support human life activities both now and in the future. An unhealthy environment can be a barrier for humans to carry out their activities (Top, Adanur and Öz, 2019). Through repair, maintenance and prevention efforts, the environment is kept

clean and free from the risk of causing disease and work accidents (Bevilacqua, Ciarpica and De Sanctis, 2019). Based on previous research on the South Sumatra LRT, the squeak noise frequency range is 800-5000 Hz with an equivalent TTB value of squeak noise of 94.93 dBA (Tsaqib and Asmoro, 2020). Based on the results of research on interior noise insulation at LRT train speeds of 500-2000 Hz, it was found to be 89.4 - 96.3 dBA, while the NAB of noise permissible for humans is 85 dBA and the maximum NAB of noise on trains is 80 dBA (Ananda Putri and Argo Asmoro, 2019). On the issue of environmental cleanliness, emergency efforts are appropriately focused on dealing with the impact of the spread of disease and optimal environmental cleanliness control strategies, namely indoor air quality control strategies including ventilation, air circulation, filtration, humidity and various electromagnetic disinfection techniques in the work environment (Quispe -Coica and Pérez-Foguet, 2020). Therefore, researchers are interested in conducting research on

environmental sanitation analysis including (noise, temperature, humidity and cleanliness) based on SMK3 (Work Environment Health and Safety Management System), MERP (Medical Emergency Response Plan) in the South Sumatra LRT in order to form and create a model. Surveillance of noise both inside LRT trains, and above and below the LRT train tracks on the South Sumatra LRT.

The aim of this research is to determine the noise criteria for the South Sumatra LRT. So in this research, novelty was obtained, namely criteria in terms of occupational health and safety management, noise levels and the highest risk factors in these criteria which were not found in other research .

## METHODS

The method used in this research is based on letter KP.114/2/2/BPKAR-SS/2023, the research flow in this research is a field survey for taking noise samples using the SM-20-A sound level meter.

## RESULTS AND DISCUSSION

In this study, pollution parameters have been measured and observed. Noise is the test parameter used. Noise is one of the main factors. Hearing loss, disruptive

behavior in social situations, speech communication disorders, sleep disorders, cardiovascular problems, and mental health problems can all be caused by noise. (Jariwala et al., 2017) .

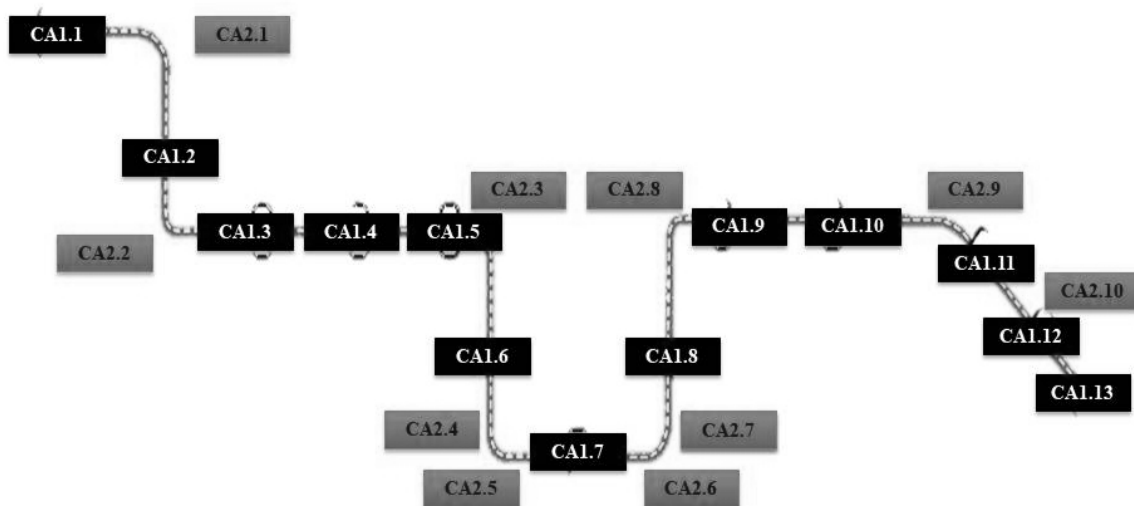
**Table 1. Noise , on the Palembang LRT , South Sumatra**

<b>Location sample</b>	<b>Noise (dB)</b>
CA 1.1	82
CA 1.2	80
CA 1.3	79
CA 1.4	81
CA 1.5	80
CA 1.6	79
CA 1.7	80
CA 1.8	78
CA 1.9	80
CA1.10	81
CA 1.11	79
CA 1.12	79
CA 1.13	79
CA 2.1	100

CA 2 .2	90
CA 2 .3	95
CA 2 .4	96
CA 2 .5	90
CA 2 .6	95
CA 2 .7	97
CA 2 .8	97
CA 2 .9	85
CA 2 .10	99
CA 3	80

Based on Table 1, it is known that several locations have met the requirements but have not met NIOSH's minimum noise standards, namely a maximum limit of 85 dB per 8 working hours. (Fata and Putra, 2023) . Even though the LRT passes every bend with a noise level of up to 100 dB (>85 dB),

it does not meet the N standard at every bend, where the noise results throughout the station meet the maximum requirements. Friction that is stronger than usual between LRT cars and the rails can cause noise in curved areas.



**Figure 1. Track of LRT Palembang-South Sumatra**

Figure 1 shows that the black ones at the South Sumatra LRT stations are 13 stations with code criteria CA1, CA2, CA3, CA4, CA5, CA6, CA7, CA8, CA9, CA10, CA11, CA12 and CA13, while the ones in gray

namely at the corner of the South Sumatra LRT road with code criteria CA2.1, CA2.2, CA2.3, CA2.4, CA2.5, CA2.6, CA2.7, CA2.8, CA2.9, and CA2.10.

**Table 2. Characteristics of respondents ( n=130)**

El variable	Counts.	n. %
Age	27 years	21
Years of service	3 years	33.9
Working hours / day	8 hours	100
Gender		

Male	73	56.3
Female	57	43.7

Table 2 provides information about the background of the respondents who received the questionnaire and explains their qualifications. Age, duration of work, number of jobs per day, and gender are mandatory qualifications for respondents (Wolkoff, Azuma and Carrer, 2021) . The majority of workers on the Palembang-South Sumatra LRT are 27 years old with a percentage of 21%, the average worker has worked for 3 years with 8 hours of work per day and is dominated by men with a percentage of 56.3% while women are 43.7 %.

## CONCLUSION

The conclusion is that on the South Sumatra LRT the highest parameter level, namely the noise parameter in the criteria (CA2), does not meet the established standards. Therefore, it is necessary to carry out an audit of the occupational health and safety management system based on OHSAS 18001.

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