

Evaluation of Occupational Noise Exposure in An Oil Refinery Manufacturing Factory at Port Klang

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Structured Abstract

Background: Noise is characterised as an undesirable auditory sensation that is characterised by high volume, unpleasantness, or disruption of auditory perception. Noise can be perceived, and its frequency, represents the number of oscillations per unit of time. Occupational noise refers to the level of sound energy that an employee's auditory system is exposed to while working in a specific industry. This study aims to examine if employees in oil manufacturing firms are subjected to occupational noise levels that may represent a possible risk to their health and well-being.

Methods: The noise level area was monitored through an overall inspection. The noise emission from the noise source is monitored and measured using a Sound Level Metre, Noise Calibrator, and measuring tape. Subsequently, personal noise surveillance was conducted using a Noise Dosimeter and Noise Calibrator. Noise mapping was the final step in the process of visualising the work area and the exposure to noise level in the context of the overall workplace layout design.

Results: Noise levels in working area P (Refinery First Floor), area Q (Boiler House), and area R (Workshop) were assessed through area monitoring. The sound intensity of the 9 points in the manufacturing industry varies, with noise levels ranging from 74.8 dB(A) to 95.3 dB(A). An excessive noise level of 95.3 dB(A) was recorded at (P9) in area R, exceeding the noise exposure limit of 85 dB(A). The noise levels at (P3) from area P and (P7) and (P8) from area R are exceeding the acceptable noise exposure level of 85 dB(A), indicating a lack of compliance with the OSH (Noise Exposure) regulation 2019. In addition, a comprehensive evaluation of the noise levels was carried out among a particular group of employees in the Refinery and Fract and Workshop working area. The employee's noise level during working hours is consistently above the acceptable range, exceeding the designated noise exposure level. Ultimately, the noise mapping indicates that a significant portion of the machines being monitored exceeding the noise exposure limit of 85 dB(A), categorising them in the red zone.

Conclusion: In summary, the noise level produced by the noise source in the working areas P, Q, and R of the manufacturing industry in Port Klang, Selangor has been measured and recorded through area monitoring. Subsequently, the employee's noise level during work was recorded, and personal noise monitoring was effectively implemented. Noise mapping was also effectively implemented to facilitate the visualisation of the work area and exposure noise level in the context of the overall workplace layout.

Keywords: Occupational Noise, Noise Exposure Levels, Manufacturing Industry, OSH (Noise Exposure) Regulation 2019

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