Worker Posture and Fatigue Assessment of Manual Handling Reject Sample in Sample House of Nickel Extraction Process

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Abstract	Background: One of the important nickel extraction processes is mixing nickel ore into Dry Ore Storage (DOS) material as the main intake of Kiln Reduction. To ensure mixed material quality, DOS Sample House operators regularly takes sample and test the homogeneity of samples manually. Material handled by lifting some buckets moved to be mixed, then 1/8 of mixed sample tested and 7/8 disposed. This test activity takes 15 minutes each for 35 samples in one shift. The aim of this study was to evaluate posture, determine the prevalence of work-related musculoskeletal disorder and fatigue of DOS Sample House II workers. Method: A random sampling method according to mining work activity type was used to obtain the sample. Total of seven workers data was collected by using Nordic Body Map for symptoms and subjective workload using Rating of Perceived Exertion (RPE) questionnaire; after they finished all tasks of their shift. Four out of 25 tasks in one test were selected (reject sample removal tasks) and assessed using Rapid Entire Body Assessment (REBA). Results: The mean age of seven workers was 37,4 years, all men, and they worked for 4,2 years on average. In one sample test, material needed to be lift were average 28,81 kg which above the recommended weight. The highest prevalence of work-related musculoskeletal disorder symptoms were lower back, right forearm, buttock, right shoulder and hip. RPE scored range was 4 to 7 that their work makes them sweat a lot and REBA scored range 8 to 10, which the risk is high, need investigation and immediately implement changes. Conclusion: The overall finding indicated that the process of selected tasks, reject sample removal task, will contribute to musculoskeletal disorder either for a short or long time exposure. Future research regarding this section needed to prevent or reduce the occurrence of musculoskeletal disorder.
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Author	Ir RANI AULIA IMRAN, S.T, M.T.