

Evaluation of Hand Arm Vibrations of Low Profile Dump Truck Operators in an Underground Metal Mine According to Job Component Analysis of a Work Cycle

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Abstract : In the present day scenario, Indian underground mines are moving towards full scale mechanisation for improvement of production and productivity levels. These mines are employing a wide variety of earth moving machines for the transportation of ore and overburden (waste). Low Profile Dump Trucks (LPDTs) have proven more advantageous towards improvement of production levels in underground mines through quick transportation. During the operation of LPDT, different kinds of vibrations are generated which can affect the health condition of the operator. Keeping this in view, the present research work focuses on measurement and evaluation of Hand Arm Vibrations (HAVs) from the steering system of LPDTs. The study also aims to evaluate the HAVs of different job components of a work cycle in operating LPDTs. The HAVs were measured and evaluated according to ISO 5349-2: 2001 standards, and the daily vibration exposures A(8) were calculated. The evaluated A(8) results show that LPDTs of 60 and 50 tons capacity have vibration levels more than that of the Exposure Action Value (EAV) of 2.5 m/s² in every job component of the work cycle. Further, the results show that the vibration levels were more during empty haulage especially during descending journey when compared to other job components in all LPDTs considered for the study.

Keywords : low profile dump trucks, hand arm vibrations, exposure action value, underground mines

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