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Focus on IFA's work

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Protection against noise for engine drivers and engine driver/shunters

Problem

With enactment of the German Ordinance on noise and vibration protection (LärmVibrations-ArbSchV) in the spring of 2007, the action values for prevention measures were lowered by 5 dB(A). Hearing protection must now be made available at daily noise exposure levels of 80 dB(A) upwards, and worn from 85 dB(A) upwards. In addition, a daily noise exposure level of more than 85 dB(A) at the worker's ear has been specified as the limit exposure value. This figure takes the attenuation of hearing protection into account. Overall, the group of workers who are now required to wear hearing protection or to be offered it has been extended considerably.

In the railway sector this gives rise to a conflict for engine drivers and engine driver/shunters between the requirement for hearing protection on the one hand and the essential need to perceive signals on the other. For this reason, the federal authority responsible for the railway sector wished to approve the use of hearing protection only if it is demonstrated that all signals necessary during operations can still be perceived.

Activities

In the first phase of a project, locations associated with noise exposure and their sources at and on tractive units were to be identified, and the noise quantified. Observation of the working procedures and the various sources of noise were also to provide indications of how noise could be avoided or reduced.

Shunting duty: remote control of the tractive unit from the auxiliary driving position

Personal long-term measurements were performed by means of noise dosimeters. Putting on the dosimeter – which was attached to a belt system – and the microphone was straightforward for the workers. This was not therefore a source of problems at the beginning and end of operations, when time is frequently at a premium.

The personal measurements were supplemented by stationary measurements taken with hand-held sound level meters. These enabled the noise exposure at discrete events to be recorded at a

number of locations of the workers (such as the auxiliary driving positions on tractive units) and emanating from a number of sources (engine/ motor, fan, whistle, etc). At the same time, the third octave band pressure level spectra were measured, and in some cases sound recordings made for subsequent evaluation in conjunction with the possible use of hearing protection.

Results and Application

Approximately 20 working shifts were monitored in order for the average noise exposure to be measured and the relevant sources of the noise identified. The results of measurements taken on passenger train duty show that hazardous noise exposure does not normally occur on modern tractive units. Whistle signals which are required at unguarded level crossings may however lead to noise exposure exceeding 85 dB(A).

The engine driver/shunter is exposed to noise from a number of sources in shunting duty:

- Engine and fan noise when the worker is travelling on the vehicle outside the cab
- Noise caused by the coupling and decoupling of rolling stock (discharge of compressed air)
- Tyfon signals intended to warn other traffic, particularly on company sites
- Radio traffic required for communication

In shunting duty, the measurements revealed exposure in some cases above the upper action level specified for the daily noise exposure level by the German Ordinance on noise and vibration protection (LärmVibrationsArbSchV). Where this is the case, measures must be taken to reduce the noise exposure. Information was obtained on problem areas and possible measures for noise abatement.

Area of Application

Prevention services of the social accident insurance institutions; occupational disease case managers; railway transport companies

Additional Information

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Expert Assistance

IFA, Division 4: Ergonomics – Physical environmental factors

Literature Requests

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