

Pursuant to Article 13, Paragraph 3 of the Law on Safety and Health at Work\* ("Official Gazette of Montenegro", No. 34/14), the Ministry of Labor and Social Welfare issued the following

## **RULEBOOK ON MEASURES OF SAFETY AND HEALTH AT WORK REGARDING RISKS ARISING FROM EXPOSURE TO VIBRATION\***

### **Article 1**

This Rulebook regulates the measures of safety and health at work that the employer needs to provide in order to eliminate or decrease the risk of occupational injuries, occupational diseases and diseases related to work that arise during operation when exposed to mechanical vibration.

### **Article 2**

Terms used herein shall have the following meanings:

- **Hand-arm vibration** - the mechanical vibration that, when transmitted to the human hand-arm system, entails risks to the safety and health of workers, in particularly vascular, neurological and muscular, bone or joint disorders;
- **Whole-body vibration** - the mechanical vibration that, when transmitted to the whole body, entails risks to safety and health of workers, in particular lower-back morbidity and trauma of the spine.

### **Article 3**

The daily exposure limit value for hand-arm vibration standardized to an eight-hour reference period shall be 5 m/s<sup>2</sup>.

The daily exposure action value for hand-arm vibration standardized to an eight-hour reference period shall be 2.5 m/s<sup>2</sup>.

The assessment and measurement of workers' exposure to hand-arm vibration is given in Annex 1, which forms an integral part of this Rulebook.

### **Article 4**

The daily exposure limit value for whole-body vibration standardized to an eight-hour reference period shall be 1.15 m/s<sup>2</sup>.

The daily exposure action value for whole-body vibration standardized to an eight-hour reference period shall be 0.5 m/s<sup>2</sup>.

The assessment and measurement of workers' exposure to whole-body vibration is given in Annex 2, which forms an integral part of this Rulebook.

### **Article 5**

The employer shall, for all workplaces where there is the possibility of workers' exposure to mechanical vibration, assess risk, and determine the manner and measures to eliminate or reduce the risk of occupational injuries, occupational diseases and diseases related to work and, if necessary, provide measurement of the levels of vibrations workers are exposed to.

The level of exposure to mechanical vibration may be assessed by means of observation of specific working practices and reference to relevant information on the probable magnitude of the vibration corresponding to the equipment or the types of equipment used in the particular conditions of use, including such information provided by the manufacturer of the equipment.

The assessment procedure referred to in Paragraph 2 of this Article should not be equated with the measurement that requires the use of certain measuring instruments and appropriate methodology.

The employer shall hire a legal person or entrepreneur to measure the levels of mechanical vibrations referred to in paragraph 1 of this Article, who has the authorization to perform technical tasks and organize professional service for safety and health at work.

The employer shall keep the information obtained on the risk assessment on the basis of observation and/or measurement of mechanical vibrations in writing to allow their comparison and consultation in the later stages.

### **Article 6**

The employer shall, while taking account of technical progress and possible measures for the elimination of risk at source, and while taking into account the general principles of the provision of measures of safety and health at work, eliminate the risks from exposure to mechanical vibration at source or reduce them to the lowest possible level.

Where the daily exposure action values referred to in Article 3, Paragraph 2 and Article 4, Paragraph 2 of this Rulebook are exceeded, the employer shall immediately establish and implement a program of technical and/or organizational measures to reduce exposure to mechanical vibration and other related risks, taking into account in particular:

- Other working methods to ensure less exposure to mechanical vibration;
- Selection of appropriate work equipment of appropriate ergonomic design and, taking into account of the work to be done, producing the least possible mechanical vibration;
- The provision of auxiliary equipment that reduces the risk of injuries caused by mechanical vibration, such as seats that effectively reduce whole-body vibration and handles which reduce the vibration transmitted to the hand-arm system;
- Appropriate maintenance programs for work equipment, the workplace and the related jobs;
- Design and layout of workplaces;
- Information and training to instruct workers to use work equipment correctly and safely in order to reduce exposure to a minimum;
- Limitation of the duration and intensity of the exposure;
- Work schedules with adequate rest periods;
- The provision of means and equipment for personal protection of workers exposed to cold and damp.

The employer shall ensure that workers shall not in any case be exposed to mechanical vibration above the exposure limit values.

If, despite the measures taken by the employer, the exposure of the workers exceeds the exposure limit values, the employer shall immediately implement all measures of health and safety at work, to reduce exposure below the exposure limit values.

The employer shall, as soon as possible, if the exposure is higher than the exposure limit value to mechanical vibrations, determine the reasons why exposure limit value was exceeded and appropriately adjust measures to protect health and safety in order to prevent further excess of exposure limit values to mechanical vibrations.

### **Article 7**

This Rulebook shall enter into force on the eighth day following its publication in the "Official Gazette of Montenegro".

\* This Rulebook transposes the Directive 2002/44/EC of the European Parliament and of the Council of 25 June 2002 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (vibration).

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MINISTER  
Zorica Kovačević

## ASSESSMENT OF EXPOSURE AND MEASURING EXPOSURE OF WORKERS TO HAND-ARM VIBRATION

### 1. Assessment of exposure

1.1. The assessment of the level of exposure to mechanical hand-arm vibration is based on the calculation of daily exposure value normalized to an eight-hour reference period A(8), expressed as the square root of the sum of the square (rms) (total value) of the frequency-weighted acceleration values determined on three orthogonal axes of  $a_{hw_x}$ ,  $a_{hw_y}$ ,  $a_{hw_z}$  as defined in chapters 4 and 5 and Annex A to the ISO standard 5349-1 (2001).

1.2. The assessment of the level of exposure may be carried out on the basis of an estimate based on information supplied by the manufacturer concerning the level of emission from the work equipment used, and based on observation of specific work practices or on measurement.

### 2. Measurement

2.1. When measurement is carried out in accordance with Article 5, Paragraph 1 of this Rulebook:

- The methods used may include sampling, which should be representative of the personal exposure of a worker to mechanical vibration;
- Methods and apparatus used must be adapted to the particular characteristics of the mechanical vibration to be measured, to ambient factors and to the characteristics of the measuring apparatus, in accordance with the ISO standard 5349-2 (2001).

2.2. In the case of devices which need to be held with both hands, measurements must be made on each hand, and the exposure is determined by reference to the higher measured value taking into account the data on the measurement of the other arm.

### 3. Means and equipment of personal protection at work

3.1. The program of technical or organizational measures under Article 6 Paragraph 2 of this Rulebook may include means and equipment for personal protection from hand-arm vibrations.

**ASSESSMENT OF EXPOSURE AND MEASUREMENT OF EXPOSURE OF WORKERS TO WHOLE-BODY  
VIBRATION**

**1. Assessment of exposure**

1.1 The assessment of the level of exposure to mechanical vibration of the whole body is based on the calculation of daily exposure  $A(8)$  expressed as equivalent continuous acceleration over an eight-hour period, calculated as the highest effective (rms) value of the frequency-weighted accelerations determined on three orthogonal axes ( $1,4a_{wx}$ ,  $1,4a_{wy}$ ,  $a_{wz}$  for a seated or standing worker), as defined in Chapters 5, 6 and 7, Annex A and Annex B to the ISO standard 2631-1 (1997).

1.2. The assessment of the level of exposure may be carried out on the basis of information supplied by the manufacturer concerning the emission levels of work equipment to be used, and based on observation of specific work practices or on the basis of measurement.

**2. Measurement**

2.1. When measurement is carried out in accordance with Article 5, Paragraph 1 of this Rulebook, the methods used may include sampling, which must be representative of the personal exposure of a worker to mechanical vibration. The methods used must be adapted to the particular characteristics of the mechanical vibration to be measured, environmental factors and the characteristics of the measuring apparatus.