

M5-EN.6. RISK FACTORS RELATED WITH MULTIFORM PHYSICAL EFFECT

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Short description of the section:

In this section examples of typical risk factors producing multiform physical effect on a driver of a land transportation company are presented and analyzed.

The **goal** of this section is:

- Distinguish the types of risk factors producing multiform physical effect;
- Analyze in more detail the types of risk factors producing multiform physical effect on a driver of a land transportation company;
- Present forms of manifestation of these risk factors and describe them;
- Give recommendations for work safety measures.

Material of this section will assist the employee, the employer and the company owner in adjusting recommendations for identifying risk factors that have a multiform physical effect, ways of prevention and safety measures for himself and his company.

M5-EN.6.1. Types of risk factors producing multiform physical (M5.6.1.jpg)

The following **types of risk factors producing multiform physical effect** are typical of the driver's workplace in a land transportation company:

- Noise ;
- Whole-body vibration;
- Hand vibration;
- Ultrasound;
- Non-ionizing radiation;
- Ionizing radiation;
- Electromagnetic fields;
- Work under low or high pressure;
- Hazard of drowning.

We will analyze the most typical risk factors producing multiform physical effect on a driver working in land transportation sector in more detail.

M5-EN.6.2. Noise (M5.6.2.1.jpg)

M5-EN.6.2.1. Risk factors

Noise is one of the most workplace risk factors in land transportation sector. Noise may be the reason of accidents, cause stress at work and, along with other workplace hazards, may have a negative effect on human health.

The degree of noise pathology first of all depends on noise intensiveness and duration.

The allowable limit values of acoustic noise in living and working environment are regulated by the hygiene norm HN 33-1:2003.

Noise levels in living and working environment are measured and the results are compared with respective allowable limit values.

In the assessment of **noise ##G31##** manifestation the following shall be **inspected and identified**:

- Is the driver exposed to noise having adverse effect on hearing (the measured level is above 87 dB(A)?
- What is the duration of work in average noise (80 dB(A)?
- Is work performed in noisy zones (measured level exceeds 85 dB(A)?
- Are noise abatement measures controlled?
- Are regular health checkups performed?

M5-EN.6.2.2. Impact on human health

High levels of noise have negative impact on human health and performance efficiency. If noise levels are not controlled or if the employee does not use hearing protection equipment his health may be adversely affected, first of all hearing and also other health problems not related with hearing.

Adverse effect on hearing:

- Hearing impairment results from exposure to noise of sufficient duration and may become chronic and irreversible health damage (may be acknowledged as occupational illness);
- Acute hearing impairment resulting from high impulses of sound (in short-time exposure to noise over 140 dB).

Effect not related with hearing:

- Increased accident risk resulting from failure to hear warning signals, startled reaction;
- Poor performance, especially in jobs requiring mental abilities such as concentration, attention, memory;

- Verbal communication hindrances;
- Stress (anger, short-temper);
 - Noise of 90-100dB impairs eye-sight, changes the breathing rhythm, pulse, increases blood pressure.

The allowable level of noise in Lithuania is regulated by Hygiene Norm HN 33-1: 2003 “Acoustic Noise”. Allowable levels in residential and working environment. General requirements for measuring methods approved by the o No.V-520 of September 3, 2003.

M5-EN.6.2.3. Safety measures

The following **work safety measures** are recommended to avoid or reduce the adverse effect of noise on human health:

- Choose noiseless working equipment (use quieter vehicles) and processes (emission of noise, noise data sheet);
- Reduce sound distribution in premises by using sound absorbing coating or lining;
- Use technical protective equipment at the key sources of noise, in noise spreading areas and workplaces, e.g. capsules, mufflers, partitions, noise-abatement booths;
- Prepare and implement noise abatement programs in the company;
- Use personal protective equipment and hearing conservation measures;
- Perform hearing check-ups (regular health checkups);
- Label noisy areas;
- Enforce the procedure of acoustic signals, warning signs and emergency notification; improve the alarming procedure.

M5-EN.6.3. Whole-body vibration (M5.6.3.1.jpg)

M5-EN.6.3.1. Risk factors

Whole-body vibration is usually experienced in vehicles and while working with mobile working equipment (excavators etc.). It is caused by rough roads and unbalanced engine operation.

In the assessment of manifestation of **whole-body vibration** **##G32##** the following shall be **inspected and identified**:

- Is potentially low dose of vibration considered in vehicle selection and design?

The adverse effect of **whole-body vibration** on **human health** is expressed by:

- Poor health, back-bone load;
- Intensive long-term vertical exposure may cause occupational illness;
- Potential adverse effect on digestion organs or pregnancy;

- Burdening of employee activities and negative influence on work requiring high concentration.

The allowable values of vibration in Lithuania are regulated by Hygiene Norm HN 51:2003 Whole-body vibration: allowable maximal values and measuring requirements in workplaces approved by the Decree No. V-585 of 15 June, 2005

M5-EN.6.3.2. Safety measures

The following **work safety measures** are recommended in workplaces in land transportation sector to reduce the adverse impact of whole-body vibration on human health:

- Reduce or remove road roughness;
- Use vehicles with allowable vibration value;
- Provide for vibration protected seats and cabins of the vehicle;
- Repair the vehicle's suspension, seat's shock absorbers and springs;
- Arrange the work in such a manner that the day's exposure to vibration would last less than recommended (e.g. rotate the drivers).

M5-EN.6.4. Self study assignment

On the basis of information presented in this section draw a list of risk factors **producing multiform physical effect** on a driver in your company.

If the risk factor is defined by standard parameters, name the **regulations** related with the risk factor and **instructions** that have to be complied with.

Choose appropriate **measures (technical, organizational, personal) for elimination of risk factors** and determine whether **additional consultation of specialists** is required. If statutory acts provide for such (e.g., pursuant to legal acts on accident prevention), point that out.

Specify **who is responsible** for implementation of selected measures and when they must be implemented.

Fill in Table 7. You may use the template **##D7##**.

Table 7

Company:

Person in charge:

Job:

Date:

Type of work, work equipment, workplace	Risk factors/ shortcomings/ loads (factor)	Factor related explanations and references	Regulations and working instructions	Measures: Technical, Organizational, Personal	Implementation (who) (when)