

Selected Learning Materials

Occupational Safety and Health, Environmental Protection

AIM OF THE MODULE

- To develop a set of knowledge, skills and attitudes of learners about the duties and rights of employees, the importance of occupational safety in wood processing, and key work processes in order to be able to master and use safe working practices in professional employment.

ASSESSMENT FORM

- Peer assessment;
- Self-assessment;
- Active activity in the module;
- Practical tasks: discussions, interviews.

TARGET GROUP

Wide range of learners of various profiles and scales of woodworking and furniture manufacturing companies, as well as different levels of responsibility and competence - from employees directly involved in production technological processes to a medium-sized woodworking plant manager.

WORK-BASED-LEARNING

The implementation of the project is based on the allocation of fields of responsibility based on the area in which their company works, or personal interest. Work based learning is following all the models from the beginning to the end of the studies.

All the topics have been chosen to be relevant to the working environment in a wood processing or furniture company, and all the discussions and case studies have been related to a real work environment, including practical, drafting, layout, planning work. This is also reflected in the Methods and ideas for learning process and Assessment of acquired learning outcomes (optimal level).

READING LIST

- De Clerg P. etc. Nutrient Management Legislation in European Countries. Wageningen Pers Netterlands, 2001. 347 p.
- Journal of Occupational and Organizational Psychology. ISSN 0963-1798
- Radwin R. G., Haney J. T. An Ergonomics Guide to Hand Tools. American Industrial Hygiene Association Fairfax, Virginia, 1996
- Berlin C., Adams C. Production Ergonomics: Designing Work Systems to Support Optimal Human Performance. Ubiquity Press Ltd, London, 2017
-
- 2016 Stack Theresa. Occupational ergonomics: a practical approach Hoboken, N.J. : Wiley
- 2016 Vincent Charles. Safer Healthcare Strategies for the Real World.
- 2018 Cham : Springer International Publishing
- <https://osha.europa.eu/en>
- <https://healthy-workplaces.eu/>

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Topic:

“WORKING ENVIRONMENT AND PROTECTION”

Author

Uldis Karlsons

ERASMUS
Skilled Up module
“Working environment and protection”
2020

Uldis Karlsons



Installer gloves

Thin gloves with a cloth base and a rubberised palm. Protects hand skin from moisture, oils and injuries. With a flexible cuff. The one-sided cover allows you to exchange air and reduces hand sweating. 2. cat. EN 383
Packaging: 10 pc.

Art. No.	Dimensions
0899 400 180	S
0899 400 181	G
0899 400 182	L
0899 400 183	XL
0899 400 184	XXL

Mechanics gloves

Packing: pack of 6 2. cat. EN 388

Art. No.	Dimensions
0899 400 529	8
0899 400 530	9
0899 400 531	10

<http://www.wurth.lv/img/text/katalogi/darbadrisibaunapgerbi.pdf>



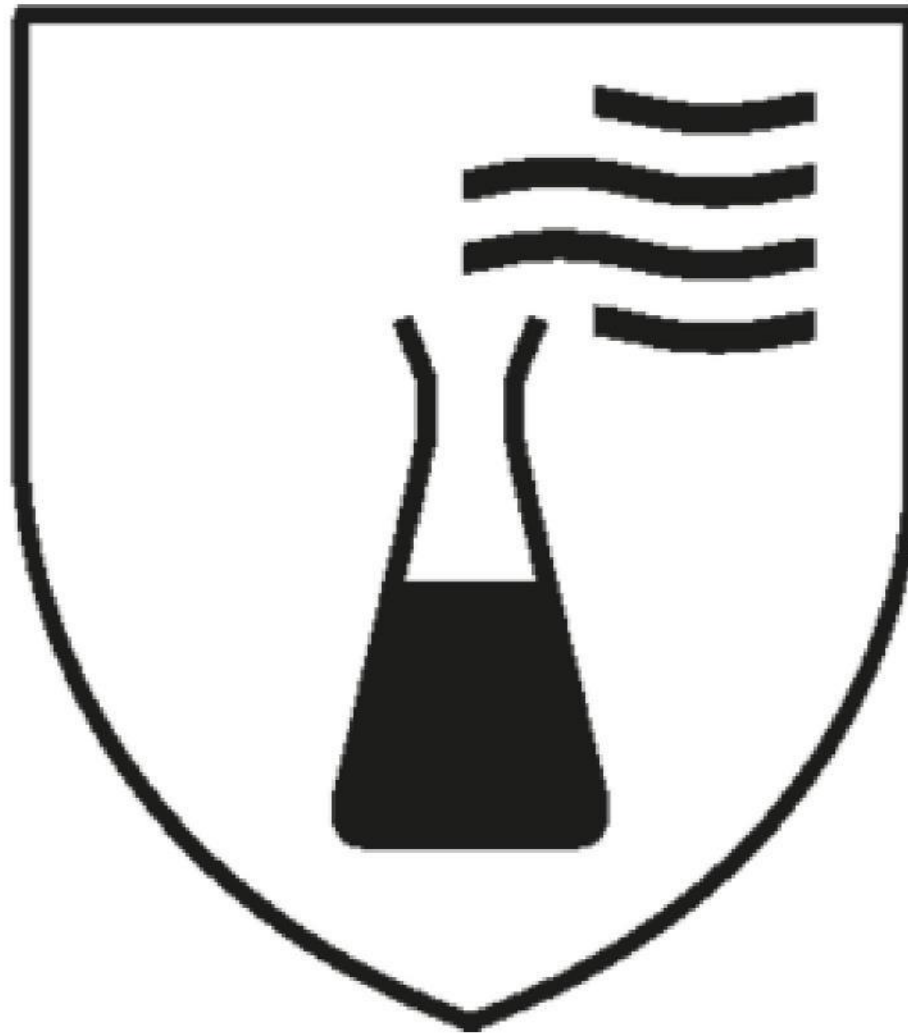
Work Gloves Sizes

To find your approximate work gloves size. Remember, no two hands are alike. Finger length relative to palm size is not constant from person to person. Additionally, what constitutes a comfortable fit can vary considerably between individuals. Using one of the methods below will help you to find an approximate Work gloves size, but no method of measurement can substitute for actually trying them on.

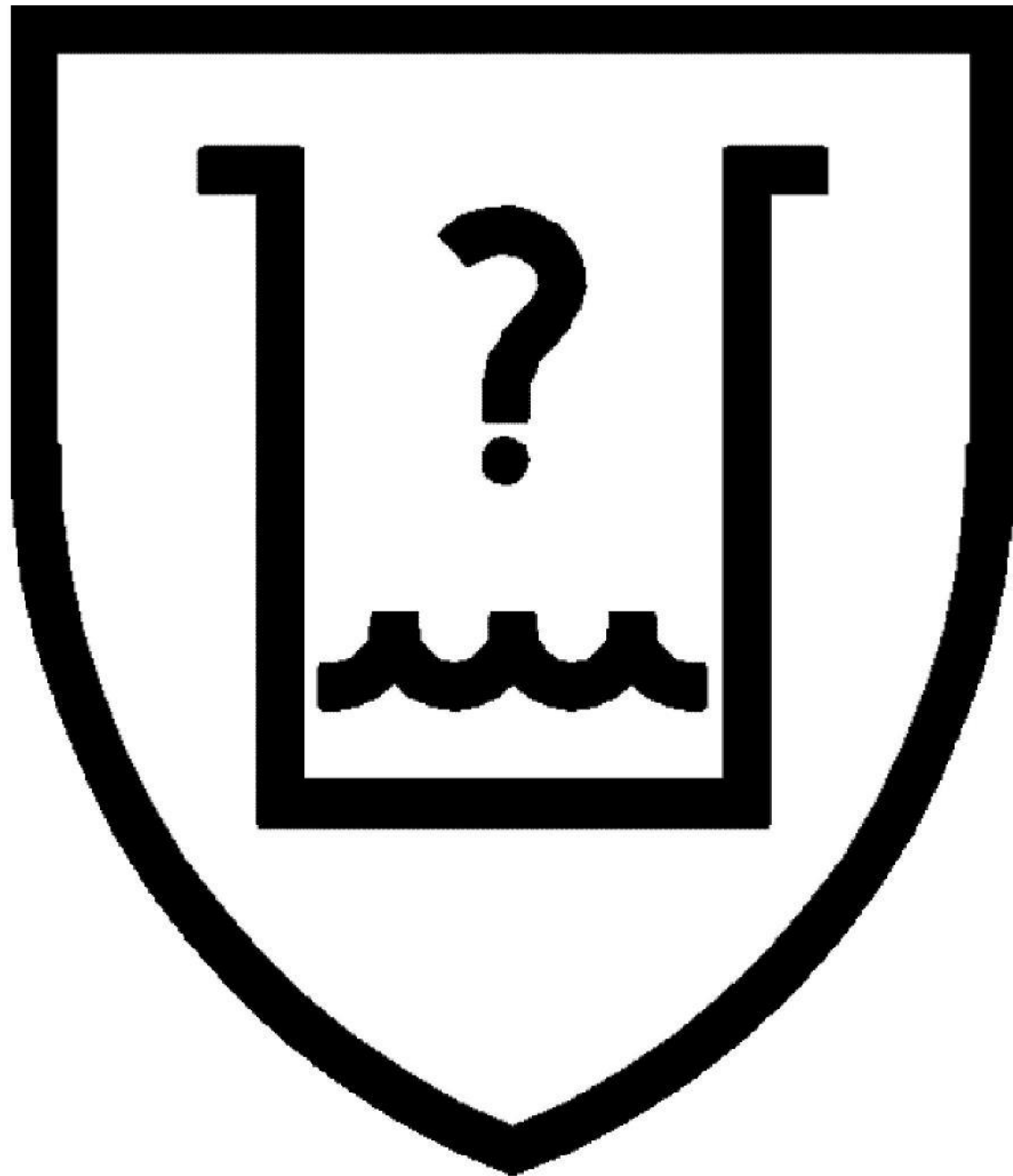
In Measurement	U.S.Sizing	European - Sizing
6" (15.2 cm)	X-Small	6
7" (17.8 cm)	SMALL	7
8" (20 cm)	MEDIUM	8
9" (23 cm)	LARGE	9
10" (25cm)	X-LARGE	10
11" (28 cm)	XX-LARGE	11
12" (30.5 cm)	XXX-LARGE	12

<http://www.workgloves.uk.com/pages/work-gloves-sizes/7121>

EN 374







Marking of protective gloves



The pictogram is used if the gloves provide protection against chemical effects and have been tested in accordance with LVS EN 374 “Chemical effects”.



The pictogram is used if the gloves provide protection against bacteriological effects and have been tested in accordance with LVS EN 374 “Bacteriological effects”.



The pictogram is used if the gloves provide protection against ionising radiation and/or radioactive contamination and have been tested in accordance with LVS EN 421 “Ionised radiation and/or radioactive contamination”.



The pictogram is used if the gloves provide protection against simple direct punctures and have been tested in accordance with LVS EN 388 “Direct cuts”.



The pictogram is used if the gloves provide protection against electric shock and have been tested in accordance with LVS EN 60903 “Electrical insulation”. Protection capacity depending on the class (class 00 - 4).



The pictogram is applied if the gloves do not accumulate static electricity and have been tested in accordance with LVS EN 388 “Static electricity”.



abc

The pictogram is applied if the gloves provide protection against cold and have been tested in accordance with LVS EN 511 "Cold exposure", where:

- a) protection against general cold (class 4)
- b) protection against direct cold (class 4)
- c) water penetration - the less does not enter one level for 30 min. (Class 2).



abcd

The pictogram is used if the gloves provide protection against mechanical impact and have been tested in accordance with LVS EN 388 "Mechanical impact", where:

- a) abrasion protection (class 5)
- b) cut protection (class 6)
- c) tear protection (Class 5)
- (d) puncture protection (class 5)








abcdef

The pictogram is used if the gloves provide protection against heat and have been tested in accordance with LVS EN 407 "Heat and/or flames", where:

- a) presence in flames (class 4)
- b) protection against direct heat (class 4)
- c) protection against general heat (class 4)
- (d) protection against radiant heat (class 4)
- (e) protection against small molten metal particles (class 4)
- f) protection against large molten metal particles (class 4)

NEW	OLD
EN ISO 374-1:2016	EN 374-1:2003
“Protective gloves against dangerous chemicals and micro-organisms”	“Protective gloves against chemicals and micro-organisms”
Removal of reference to micro-organisms in the text (see new part 5)	Assumption of protection against micro-organisms
Number of test chemicals increased from 12 to 18	12 test chemicals
Beaker no longer used	Beaker for “waterproof protective gloves with limited protection against chemical dangers”
Gloves classified as type A, B or C	–/–
Change of labelling on the product: pictogram of conical flask with differing number of letters for test chemicals per type	Pictogram of conical flask with at least 3 letters for test chemicals

	Codeletter	Chemical	CAS Number	Class
OLD	A	Methanol	67-56-1	Primary alcohol
	B	Acetone	67-64-1	Ketone
	C	Acetonitrile	75-05-8	Nitrile compound
	D	Dichloromethane	75-09-2	Chlorinated hydrocarbon
	E	Carbon disulphide	75-15-0	Sulphur containing organic compound
	F	Toluene	108-88-3	Aromatic hydrocarbon
	G	Diethylamine	109-89-7	Amine
	H	Tetrahydrofuran	109-99-9	Heterocyclic and ether compound
	I	Ethyl acetate	141-78-6	Ester
	J	n-Heptane	142-82-5	Saturated hydrocarbon
	K	Sodium hydroxide 40%	1310-73-2	Inorganic base
	L	Sulphuric acid 96%	7664-93-9	Inorganic mineral acid, oxidizing
NEW	M	Nitric acid 65%	7697-37-2	Inorganic mineral acid, oxidizing
	N	Acetic acid 99%	64-19-7	Organic acid
	O	Ammonium hydroxide 25%	1336-21-6	Organic base
	P	Hydrogen peroxide 30%	7722-84-1	Peroxide
	S	Hydrofluoric acid 40%	7664-39-3	Inorganic mineral acid
	T	Formaldehyde 37%	50-00-0	Aldehyde

NEW			OLD	
ISO 374-1:2016/Type A	ISO 374-1:2016/Type B	ISO 374-1:2016/Type C	EN 374:2003	EN 374:2003
				
JKLMNO	JKL		AKL	

Work for which appropriate personal protective equipment is used

Hand and palm protection products shall be used if the following works are performed:

- work with acids, alkalis or basic solutions, disinfectants, corrosion cleaners and other products with a chemical effect;
- work with hot materials, as well as with hot materials;
- welding;
- handling sharp objects (provided they are not associated with mechanisms capable of pulling gloves in).

Work for which appropriate personal protective equipment is used

Hand and palm protection products shall be used if the following works are performed:

- cutting, logging and tying;
- work with sharp objects (including boning works);
- work with pneumatic hammers;
- excavation and mining works;
- moving heavy items by physical force.

Classification of work footwear according to EN 345/ EN ISO 20345

- S1** Leather upper part, closed heel part, antistatic, shock-absorbing sole heel part, protective shell in the toe of the shoe (metal or plastic), oil-resistant soles
- S1P** features such as S1, additional insole protection against puncture (metal or textile)
- S2** features such as S1, additional water tightness (at least 1 hour)
- S2P** features such as S2, additional insole protection against puncture (metal or textile)
- S3** features such as S1, additional insole protection against puncture, water tightness (at least 1 hour), profiled soles
- S5** features such as S3, but the material is not leather but a continuous or vulcanised material (for example, rubber boots)

Sandals “PRO”

Complies with EN ISO 20345

Class S1P

Metal shell on the toe **Art No. M018 028 OXX**

Metal plane in the sole XX - indicates the size

Natural leather

Quick-drying fabric lining

Non-gloss two-layer IPU sole

Shock absorber integrated in the heel

Removable comfort insoles

Weight (size 42) = 600 g/shoe

Sizes available: 30-46



<http://www.wurth.lv/img/text/katalogi/darbadrisibaunapgerbi.pdf>

Work for which appropriate personal protective equipment is used

Protective footwear with toe protection and impervious sole is required for the following works:

- assembly and dismantling of building frames, laying of foundations, road construction and repair;
- scaffolding assembly;
- concreting, including making and dismantling of formworks;
- work in the company's territory outside the premises and in warehouses;
- roofing work.

Work for which appropriate personal protective equipment is used

Protective equipment for the whole body, abdominal and other parts of the body shall be used if the following works are performed:

- work outdoors in the rain and cold;
- works where the employee must be clearly visible (work on the streets, roads, railways, airports, ports), fluorescent or reflective protective clothing is required;
- construction work.

THE **A B C D** OF FALL PROTECTION

The **A, B, C, D of Fall Protection** covers the fundamental requirements of every personal fall protection system. Use it as a guide when evaluating your fall protection requirements, however, always consult a fall protection specialist if you're unsure of any aspect of fall protection or fall protection equipment.

A

ANCHORAGE

Anchorage devices provide a secure point of attachment (to an existing structure) for the fall arrest system. Anchorage devices can be permanent or temporary and vary to suit the type of structure available.

**B**

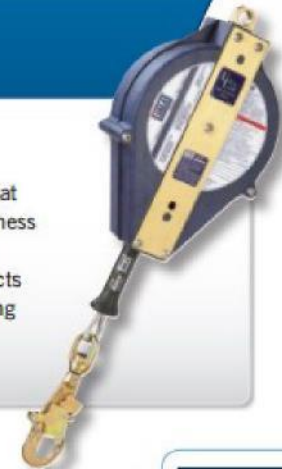
BODY SUPPORT

Full body harnesses connect the worker to the fall arrest system. They are specially designed to protect the worker against serious injury in the event of a fall whilst also remaining comfortable to wear.

**C**

CONNECTOR

Connectors are devices that connect the full body harness to the anchorage system. They can be single products or multiple devices working together.

**D**

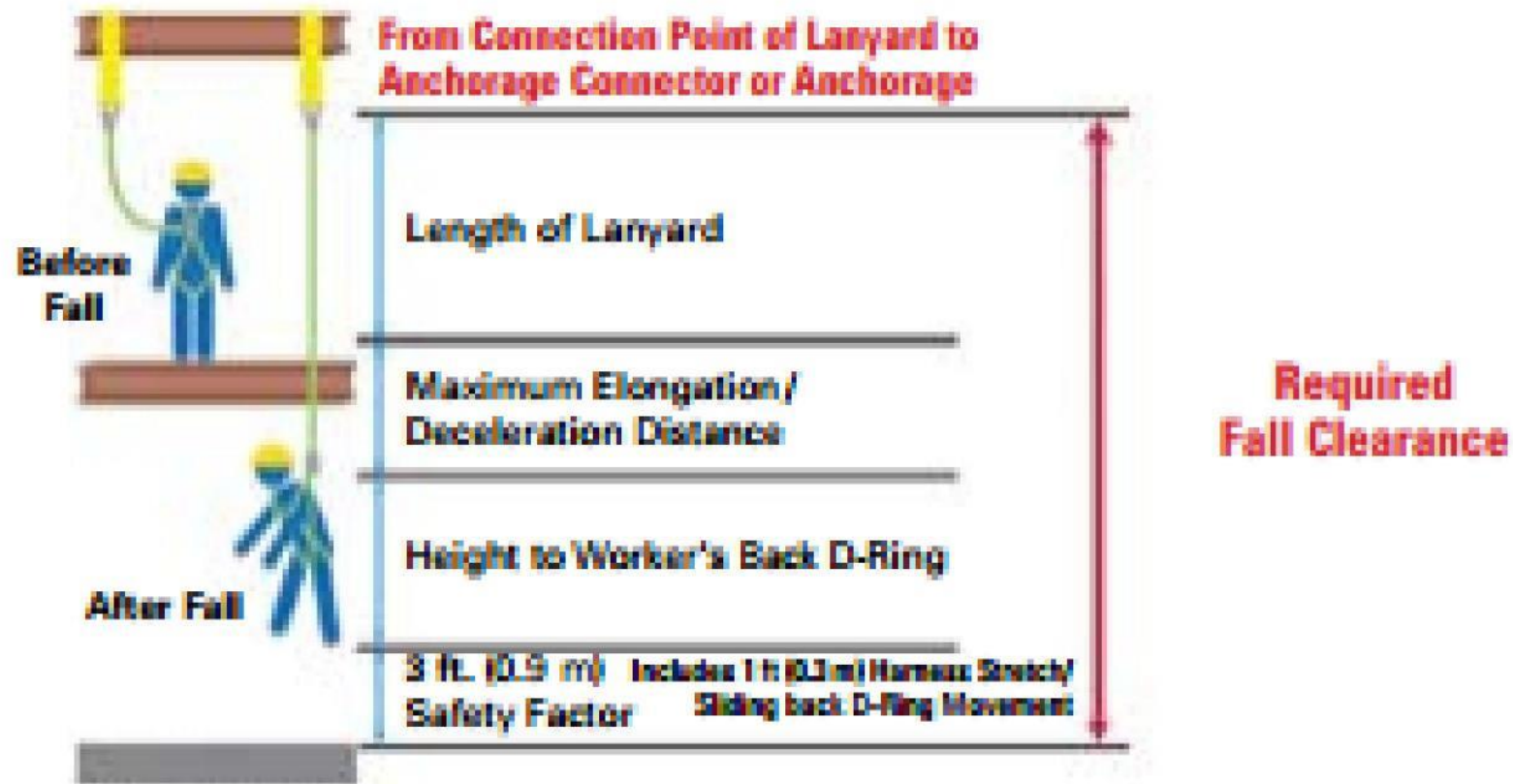
DESCENT/ RESCUE

Decent & Rescue systems enable the retrieval of an injured or incapacitated worker. In the event of a rescue, this equipment facilitates rapid recovery of the worker without endangering other workers in the process.



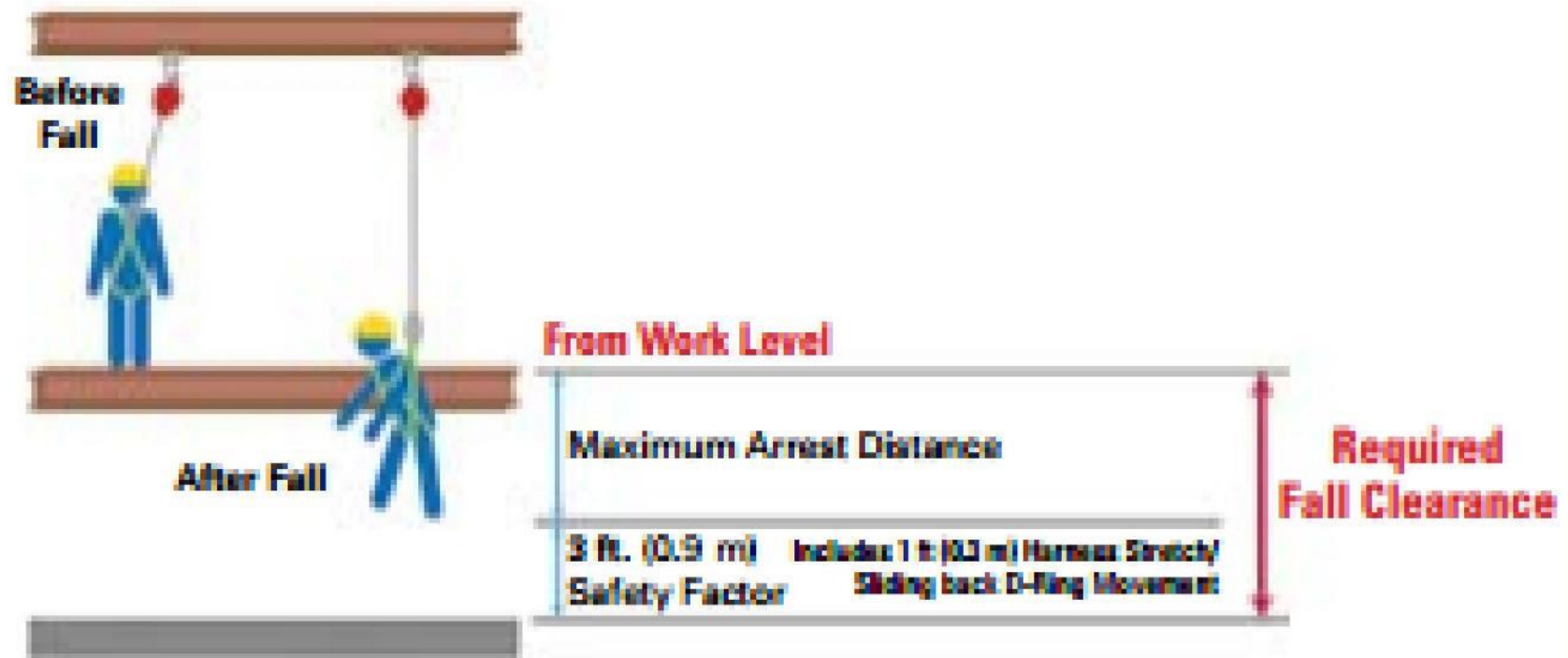
<http://api.capitalsafety.com/api/assets/download/1/8601454>

Shock-Absorbing Lanyard with Cross-Arm Anchorage Connector



<https://www.millerfallprotection.com/pdfs/MillerCatalog.pdf>

Self-Retracting Lifeline with D-Bolt Anchorage Connector



<https://www.millerfallprotection.com/pdfs/MillerCatalog.pdf>

Work for which appropriate personal protective equipment is used

Protective equipment for protection of the whole body against falls shall be used if the following works are performed:

- work on scaffolding and roofs;
- various assembly, repair and maintenance work at height, including work on moving platforms (suspensions, lifting baskets);
- work on masts and towers;
- work in high cargo cranes.





- The following safety signs shall be used at the workplace, as appropriate to the situation:

1. Prohibition sign

Prohibition sign

Prohibition sign - a sign that prohibits an activity that might lead to a dangerous situation. The prohibition sign shall be in the form of a circle with a black pictogram on a white background, the edge of the sign and the diagonal line passing through the pictogram from left to right at an angle of 45° and shall be red (the red part shall be at least 35% of the sign area) (see Figure 1)).

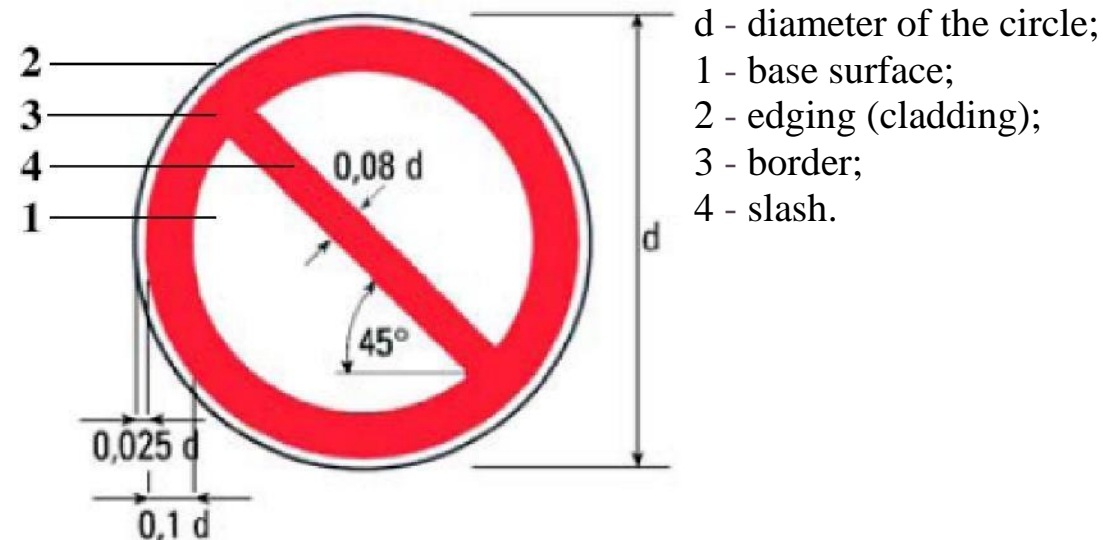


Figure 1. Colour graphic representation of prohibition signs and size ratio

- The following safety signs shall be used at the workplace, as appropriate to the situation:

2. Warning sign

Warning sign

Warning sign - a sign that warns of risk or danger. The warning sign is in the form of a triangle with a black pictogram on a yellow background (the yellow background must occupy at least 50% of the area of the sign), the border and the edge are black (see Figure 2).

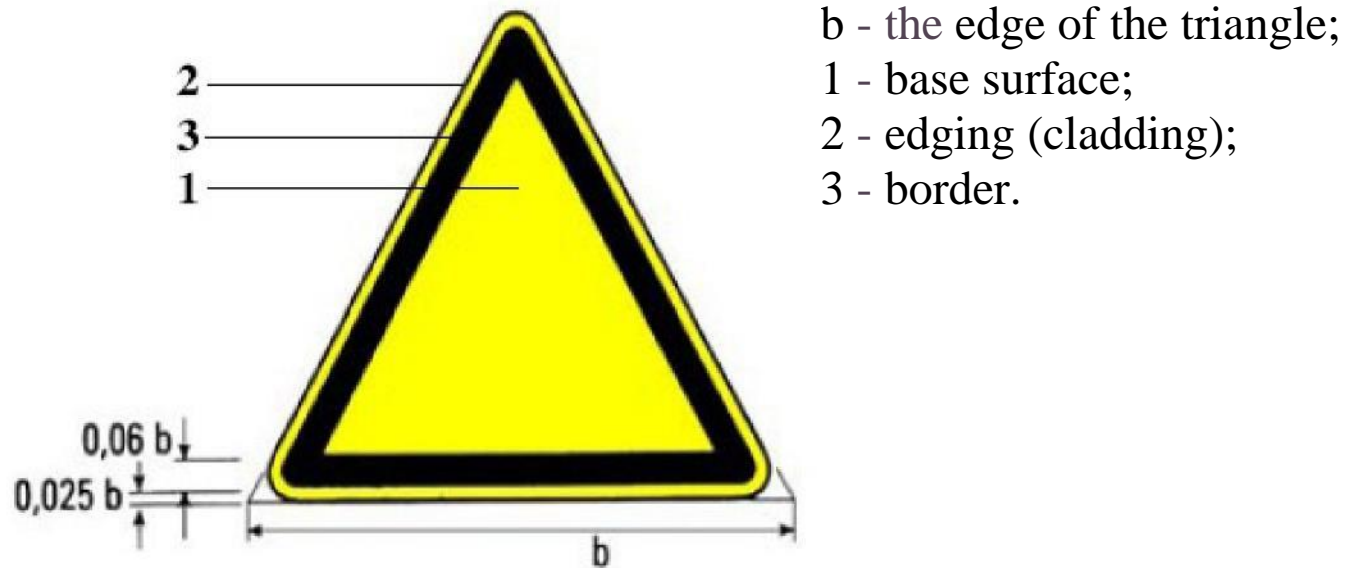


Image 2. Colour graphic representation of the signs in the warning and the size ratio

- The following safety signs shall be used at the workplace, as appropriate to the situation:

3. Order sign

Order sign

Order sign - a sign indicating a specific action; The order sign is in the form of a circle with a white pictogram on a blue background (the blue background must occupy at least 50% of the area of the sign), the border is black (see figure 3).

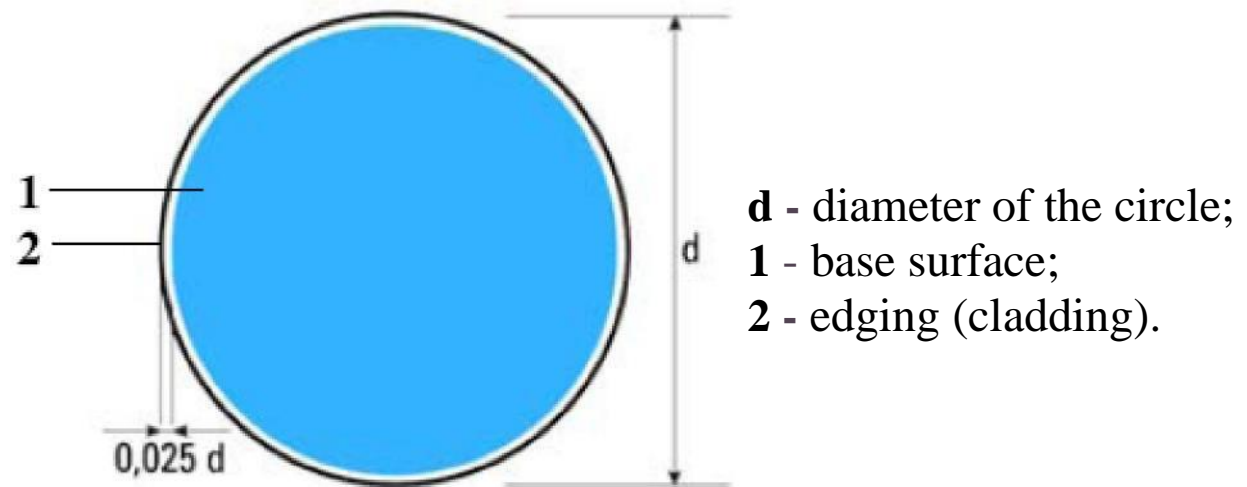


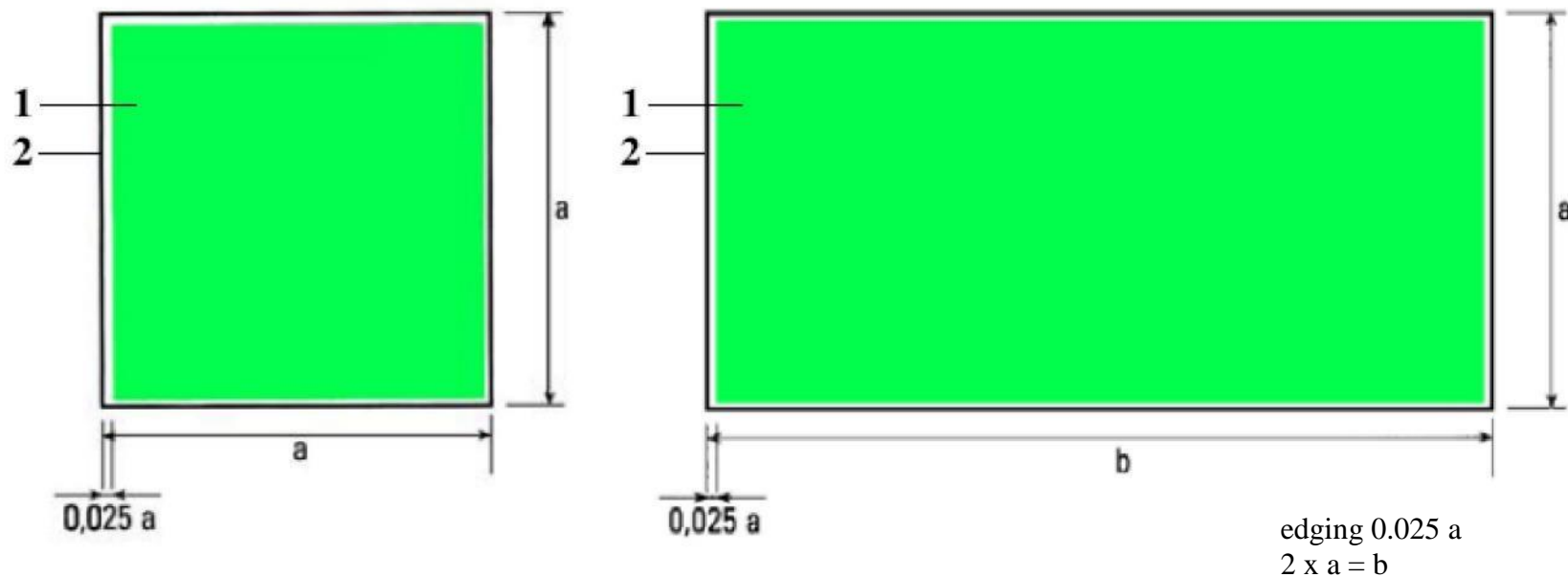
Image 3. Colour graphic representation of order signs and size ratio

- The following safety signs shall be used at the workplace, as appropriate to the situation:

4. First aid or evacuation exit and rescue emergency exit marks

First aid or evacuation exit and rescue emergency exit marks

First aid, escape exit and additional rescue exit sign - a sign that provides information on first aid sites, escape exits and additional rescue exits. The first aid sign, evacuation exit and additional emergency rescue exit signs shall be in the form of a rectangle or square with a white pictogram on a green background (the green background shall occupy at least 50% of the area of the sign) (see Figure 4).



a, b - sides of square and rectangle; 1 - base surface; 2 - edging (cladding)

Figure 4 Graphical representation of the colours and aspect ratio of first aid, evacuation exit and emergency rescue exit signs

- The following safety signs shall be used at the workplace, as appropriate to the situation:

5. Fire safety sign - a sign that provides information about the fire-fighting equipment and facilities, and their locations, as well as information regarding signs in evacuation plans or fire, rescue and civil protection plans;

Fire safety sign

Fire safety sign - a sign that provides information about the fire-fighting equipment and facilities, and their locations, as well as information regarding signs in evacuation plans or fire, rescue and civil protection plans. The fire safety signs and the graphic representation correspond to those of the first aid, evacuation exit and emergency rescue exit signs, except that the fire safety sign has a red background colour. The fire safety sign thus has a rectangular or square shape, a white pictogram on a red background (the red background must occupy at least 50% of the area of the sign) (see example in Figure 5).



Figure 5 Fire safety sign - Fire hydrant

- The following safety signs shall be used at the workplace, as appropriate to the situation:

6. Information area

Information sign

Information sign - a sign that provides additional information about the signs listed above. When taking preventive measures, the employer may also use signs that are not provided for in the Regulations in addition to the approved safety signs (see Figure 6).

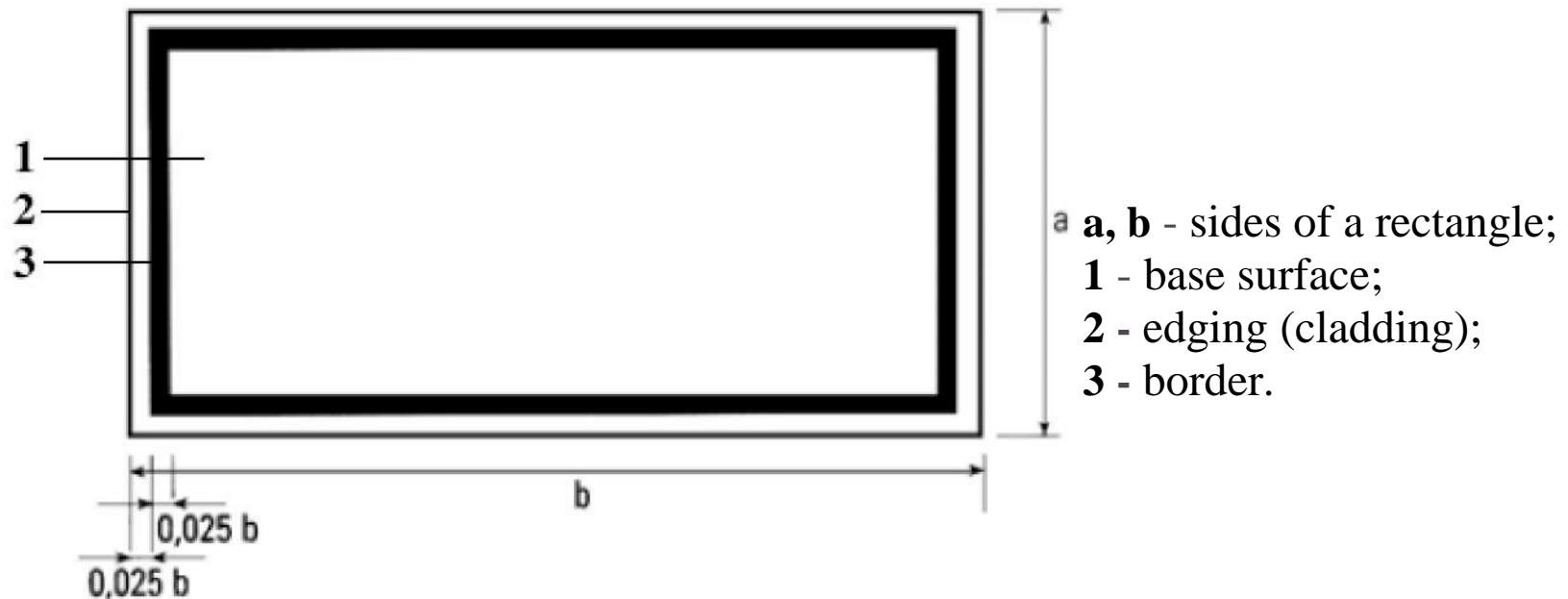


Figure 6 Colour graphic representation of information signs and size ratio

- The following safety signs shall be used at the workplace, as appropriate to the situation:

7. Signal colouring

Signal colouring

Signal colouring - colouring with a specific meaning. The dimensions of the signal paint shall be proportional to the size of the obstacle or dangerous area. Yellow and black or red and white stripes shall be of the same width and placed at 45 degrees (see Figure 7).



Figure 7 Types of signal colouring

Signal colouring is used:

- marking of places where a collision with barriers is possible;
- in places where a fall is possible;
- in places where there is a danger of falling objects;
- in places where there are risk factors associated with shocks and impacts, in order to avoid them;
- for the marking of vehicle routes indoors and outdoors, where this is necessary for the protection of employees, using continuous bands in a clearly visible colour, preferably white or yellow, also taking the colour of the floor into account.

When creating these enclosures, it is recommended to observe the required safety distance of 0.8 m between vehicles and the nearest objects, as well as pedestrians and vehicles.

- The following safety signs shall be used at the workplace, as appropriate to the situation:

8. Illuminated sign

Illuminated sign

Illuminated sign - a sign made of semi-translucent or translucent material and illuminated from the inside or from the back. An illuminated sign may emit an intermittent and continuous light signal. An interrupted signal indicates a higher degree of danger or urgent action. The activation of the illuminated sign shall indicate the start of the relevant activity, and it shall remain on until the end of the activity.

- The following safety signs shall be used at the workplace, as appropriate to the situation:

9. Acoustic signal

Acoustic signal

Acoustic signal - an encoded (predetermined) sound signal transmitted by an appropriate device without the use of a human voice or an artificially created voice imitating it.

The acoustic signal can be used in the following cases:

- if it is necessary to inform about the danger or risk;
- if it is necessary to give instructions to perform specific actions;
- in the case of evacuation.

The activation of the acoustic signal shall indicate the start of the relevant activity, and such shall remain on until the end of the activity. The acoustic signal should be ready to be switched on again immediately after use.

The acoustic signal, as soon as it is activated, must indicate the need to take specific action.

The acoustic signal must operate as long as the need exists.

The acoustic signal must be more resonant and louder than the ambient noise - one that is clearly audible but at the same time not too disturbing.

An acoustic signal informing of an evacuation must be continuous.

- The following safety signs shall be used at the workplace, as appropriate to the situation:

10. Verbal communication

Verbal communication

Verbal communication - communication that provides encoded (predefined) security information with a human voice or an artificially created voice simulating it, using a suitable device.

Verbal contact (verbal communication) takes place between a speaker or transmitter and one or more listeners, using short texts, sentences, groups of words or individual words, which may be codified.

- The following safety signs shall be used at the workplace, as appropriate to the situation:

11. Hand signal

Hand signal

Hand signal - a signal that provides encoded (predefined) safety information with the movements or positions of hands and palms to persons who are performing manoeuvres dangerous to others or are within the range of such manoeuvres.

A set of codified hand signals (gestures) does not preclude the use of other codes, in particular for certain types of business, provided that they indicate identical manoeuvres.

- The employer shall provide safety signs at workplaces where the work environment risks or serious and imminent danger cannot be eliminated or reduced by means of collective protection as well as by the means, methods, and procedures used in the organisation of work. The employer is responsible for maintaining the relevant safety signs. When selecting safety signs, the employer shall take any work environment risk at the workplace into account.

The employee shall be made aware of the safety signs used in the workplace and of the meaning of safety signs (especially signals and verbal communication), and **of the use of safety signs**.

The safety sign shall be placed at a suitable height in the field of vision of the employee, in close proximity to the dangerous object concerned and within easy reach, taking into account any obstacles as well as access to exits in the event of danger.

31 The pipelines shall be marked according to their contents in accordance with the following requirements:

- 31.1. **blue** - oxygen;
- 31.2. **green** - water;
- 31.3. **red** - steam;
- 31.4. **grey** - air;
- 31.5. **yellow** - flammable gas;
- 31.6. **black** - non-combustible gas (liquid);
- 31.7. **orange** - acid;
- 31.8. **violet** - alkali;
- 31.9. **brown** - flammable liquid.

Locations of fire safety equipment shall be marked with fire safety signs specified in the Latvian state standard Security Signs and Signal Painting Used for Fire Safety and Civil Protection.

The area of the red paint shall be large enough for the fire-fighting means to be easily identified.

Places where collision with obstacles, falling or threat of falling objects is possible are marked with yellow- and black- or red- and white-striped signal painting.

The dimensions of the signal paint shall be proportional to the size of the obstacle or dangerous area.

Yellow and black or red and white stripes shall be of the same width and placed at 45 degrees.

Routes of vehicles moving in the premises, where this is necessary for the protection of employees, shall be marked with coloured, clearly visible, continuous stripes (white or yellow), taking the colour of the floor covering into account.

The lines shall be placed in such a way so as to indicate a safe distance between the vehicles and any object which may be adjacent, as well as between pedestrians and vehicles.

No.	Colour	Safety sign	Meaning of painting
1.	Red		Stop! Turn off! Emergency shut down device Evacuation
		Prohibition sign	Hazardous activity, dangerous object
		Fire safety sign	Fire-fighting equipment and means, and their locations
2.	Yellow or amber colour	Warning sign	Be careful! Be cautious! Make sure!
3.	Blue	Order sign	Specific behaviour or action Use personal protective equipment!
4.	Green	First aid or evacuation exit and rescue emergency exit marks	Doors, exits, routes, equipment, devices

Prohibition signs



2.1. No smoking!



2.2. No smoking or open flame!



2.3. Pedestrian movement prohibited!



2.4. Do not extinguish with water!



2.5. Not drinkable!



2.6. Unauthorised movement prohibited!



2.7. Internal traffic is prohibited



2.8. Do not touch



**2.9. Prohibited
(with explanatory text)**



2.10. Do not stand under the load



2.11. Scaffolding assembly

Warning signs



**4.1. Flammable
substance or fire
hazard room**



**4.2. Explosive
substance or explosive
room**



4.3. Toxic substance



**4.4. Corrosive
substance**



**4.5. Radioactive
substance or ionising
radiation**



**4.6. Attention, lifted
load**



**4.7. Internal
transport**



**4.8. Dangerous,
electricity**



4.9. General danger



4.10. Laser beam



4.11. Oxidising agent



**4.12. Non-ionising
radiation or radiation**

ATTENTION, CONSTRUCTION WORK



**Unauthorised movement
prohibited!**



Order signs



6.1. Protective goggles must be used



6.2. Protective helmet must be used



6.3. Hearing protection must be used



6.4. Gas mask or a respirator must be used



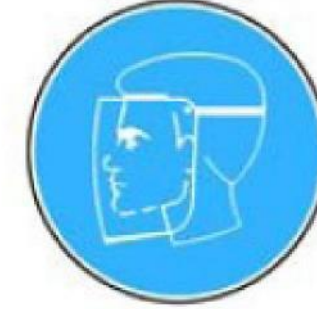
6.5. Work footwear must be used



6.6. Protective gloves must be used



6.7. Protective suit must be used



6.8. Face protection must be used

First aid and additional rescue exit signs



8.1. First aid station



8.2. Stretchers



8.3. Sanitary treatment



8.4. Eye rinsing



8.5. Respirators



8.6. Dressing materials



8.7. Safe gathering place



8.8. Resuscitation agent



8.9. Phone for emergency calls

Fire safety signs



Fire hydrant



Fire and rescue ladder



Fire extinguisher

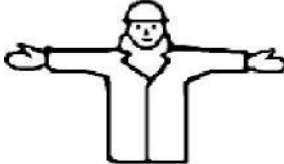






Phone for calling the fire and rescue service










Directions to the location of fire-fighting equipment and facilities




Workplace hand signals

No.	Signal	Meaning	Description	Illustration
1	2	3	4	5
1.	Start!	Attention Start the activity	Both arms outstretched horizontally with palms forward	
2.	Stop!	Stop movement	Right arm raised with palm forward	
3.	Stop!	Stop activity	Both hands connected at chest height	
4.	Lift!	Lift the load	The right arm is raised with the palm forward and makes circular movements slowly	
5.	Lower!	Lower the load	The right arm is lowered with the palm facing in and making slow circular movements	


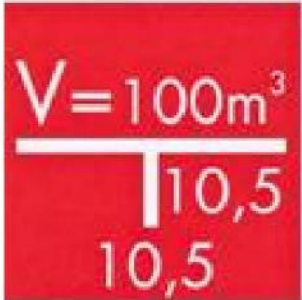


1. Warning signs

1.1 Explosive object	1.2 Oxidising agent	1.3 Danger - electricity	1.4. Gas cylinders
			
1.5 Grounding	1.6. Explosive substance	1.7 Explosion-proof electrical equipment and electrical equipment	
			

2. Prohibition signs

2.1. Smoking and open flames are prohibited	2.2. No smoking!	2.3. It is prohibited to light a fire	2.4 Do not extinguish with water
			

3. Signs of fire water intakes

3.1 Shutter closing the connecting pipe	3.2 Location of fire-fighting water body and water taking site	3.3 Fire-fighting water hydrant	3.4. Foam solution J fire hydrant
			

3.5. Fire-fighting water body and water taking site



Note: 3.2, 3.3 and 3.4 sign designations:

V - volume of the fire water tank in cubic metres (minimum height of letters - 40 mm);

C or **S** - loop or blunt water pipe (minimum letter height - 20 mm);

9999 - hydrant number (minimum digit height - 20 mm);

R or **M** - type of hydrant (minimum letter height - 20 mm);


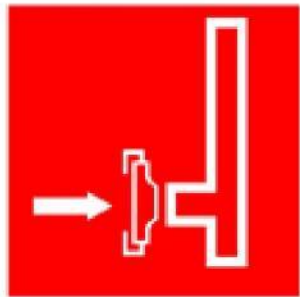


300 - diameter of the water pipe in millimetres (minimum digit height - 30 mm);

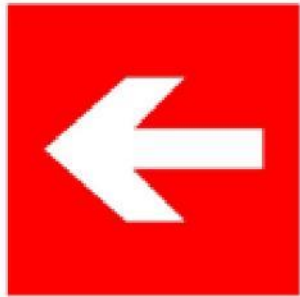
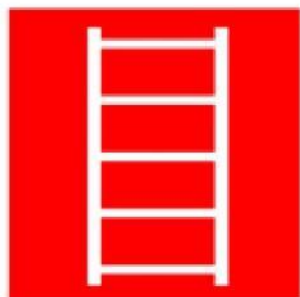

110.5 - distance from the sign to the hydrant in metres (minimum digit height - 30 mm);

UH - water fire hydrant (minimum letter height - 40 mm);







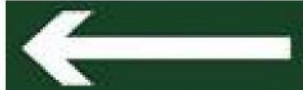

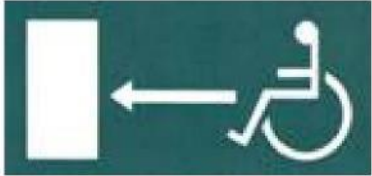

PH - foam solution fire hydrant (minimum letter height - 40 mm).

4. Signs of fire extinguishers

4.1 Extinguishing media	4.2 Dry piping for fixed fire-fighting system	4.3 Fire extinguisher	4.4 Fire hydrant
			

4.5. Direction to the location of fire extinguishers (to be used jointly with signs 4.1, 4.3, 4.4 and 4.7)	4.6. Fire escape stairs	4.7. Manual fire protection system triggering device
		

5. Fire escape route signs


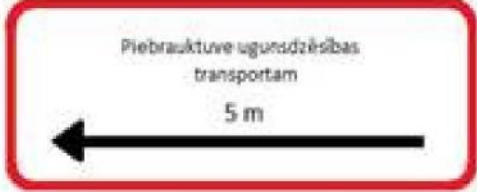
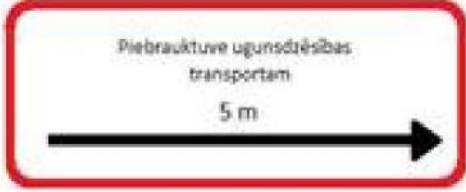
5.1. Direction to emergency exit	5.2 Direction to emergency exit	5.3 Direction to emergency exit	5.4. Direction to emergency exit
			
5.5. Direction to emergency exit	5.6. Direction to emergency exit	5.7. Direction to emergency exit	5.6. Emergency exit
			
5.9 Route to rescue exit for people with motor disabilities sign	5.10 Open by pushing		
			

6. Order signs

6.1. Smoking area	6.2 Use antistatic shoes	6.3. In the event of a fire call
		

6.4. Fire

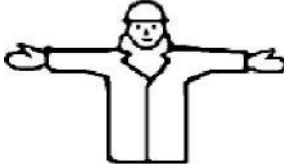





7. Signs for fire trucks

7.1 Access for fire trucks. Stopping or parking restriction to the right and left of the sign	7.2 Access for fire trucks. Stopping or parking restriction to the left of the sign	7.3. Access for fire trucks. Stopping or parking restriction to the right of the sign
		

7.4. Place for fire trucks



Workplace hand signals

No.	Signal	Meaning	Description	Illustration
1	2	3	4	5
1.	Start!	Attention Start the activity	Both arms outstretched horizontally with palms forward	
2.	Stop!	Stop movement	Right arm raised with palm forward	
3.	Stop!	Stop activity	Both hands connected at chest height	
4.	Lift!	Lift the load	The right arm is raised with the palm forward and makes circular movements slowly	
5.	Lower!	Lower the load	The right arm is lowered with the palm facing in and making slow circular movements	



















No.	Colour	Safety sign	Meaning of painting
1.	Red		Stop! Turn off! Emergency shut down device Evacuation
		Prohibition sign	Hazardous activity, dangerous object
		Fire safety sign	Fire-fighting equipment and means, and their locations
2.	Yellow or amber colour	Warning sign	Be careful! Be cautious! Make sure!
3.	Blue	Order sign	Specific behaviour or action Use personal protective equipment!
4.	Green	First aid or evacuation exit and rescue emergency exit marks	Doors, exits, routes, equipment, devices



Topic:

“TEST: WORKING ENVIRONMENT AND PROTECTION”

Author

Uldis Karlsons

Knowledge test

first name

surname

date

signature

Please mark the most correct answers !!!

1. What does “labour protection” mean?
 - ☐ occupational safety at work;
 - ☐ health of employees at work;
 - ☐ safety and health of employees at work.

2. To identify potential risks to the safety and health of workers:
 - ☐ the company must carry out internal supervision of the work environment, including the assessment of work environment risks;
 - ☐ the company must perform a repeated occupational safety briefing;
 - ☐ the company must provide training on fire safety.

3. When assessing work environment risks, the following shall be taken into account:
 - ☐ the severity of the consequences of the risk;
 - ☐ the likelihood of the risk occurring;
 - ☐ the probability of occurrence of the risk and the severity of the consequences of the risk.

4. The most common work environment risk factors are:
 - ☐ physical factors (noise, vibration, microclimate, lighting);
 - ☐ physical factors (noise, vibration, microclimate, lighting); biomechanical factors (forced posture, uniform movements, weight transfer);
 - ☐ physical factors (noise, vibration, microclimate, lighting); biomechanical factors (forced posture, uniform movements, weight transfer); psychosocial factors (lack of time, overtime, poor relationship with management, colleagues, conflicts; dust (welding spray, abrasive dust, wood dust); chemicals (varnishes, paints, synthetic detergents); biological factors (tick-borne encephalitis agents, viral hepatitis B and C agents, HIV, AIDS), trauma factors (working with work equipment, dangerous equipment, work at height).

5. After the work environment risk assessment and workplace inspection:

- ☐ develop labour protection instructions;
- ☐ develop a plan of labour protection measures, where labour protection measures are determined;
- ☐ develop a plan of labour protection measures, which determines labour protection measures, deadlines for their implementation and responsible persons.

6. Safety signs are used:

- ☐ to warn employees;
- ☐ to warn the guests of the company;
- ☐ to warn and target the workers exposed to risk and to direct their actions in any risk situation (imposing an obligation, banning, informing, etc.).

7. Safety signs apply to:

- ☐ the employer;
- ☐ employer as well as employees;
- ☐ employer, employees as well as persons not related to the operation of the company, but staying in the territory of the company.

8. Safety signs are divided into the following types:

- ☐ prohibition signs; warning signs; order signs;
- ☐ prohibition signs; warning signs; order signs; first aid, escape exit and rescue;
- ☐ additional exit signs;
- ☐ prohibition signs; warning signs; order signs; signs of first aid, evacuation exit and additional rescue exit signs; fire safety signs; information signs; signal colouring; illuminated signs; acoustic signal; hand signal.

9. Mandatory health check should be performed:

- ☐ to the employees whose state of health is affected by harmful work environment factors, as well as those employees whose work conditions have special conditions;
- ☐ to those employees, whose state of health is affected by or may be affected by factors of the working environment that are harmful to their health, and those employees who have special conditions at work;
- ☐ to the employees, whose state of health may be affected by factors of the working environment that are harmful to their health, and those employees who have special conditions at work.

10. Individual protection means are used:

- ☐ if the exposure to the work environment risk factor cannot be avoided;
- ☐ if the exposure to the work environment risk factor cannot be avoided or reduced by the use of collective protection means;
- ☐ if only high-hazard work is performed in the company;

11. It is only permitted to use protective equipment that complies with:

- ☐ relevant work environment risk factors;
- ☐ relevant work environment risk factors and conditions in the workplace;
- ☐ the relevant work environment risk factors (the protective equipment must not create an even greater risk), conditions at the workplace; ergonomic requirements and the state of health of the employees and the peculiarities of the height of the employees (if necessary, the protective equipment shall be adjusted accordingly).

12. The employer provides employees with protective equipment:

- ☐ free of charge;
- ☐ withholding funds from labour payment;
- ☐ issuing one free kit for five years.

13. The employer has the following obligations:

- ☐ to organise theoretical training of employees in the use of protective equipment;
- ☐ to organise training of employees (theoretical and practical) in the use of protective equipment;
- ☐ to organise training of employees on the use of practical protective equipment.

14. If movement of load by physical power cannot be avoided, the employer shall:

- ☐ provide the employee with suitable auxiliary devices (for example, a trolley; roller conveyors);
- ☐ provides the employee with gloves;
- ☐ provides the employee with work shoes.

15. The employer determines the number of first aid kits at workplaces.

- ☐ if there are up to 10 employees at the workplace, at least one first aid kit shall be provided.
- ☐ if there are up to 50 employees at the workplace, at least one first aid kit shall be provided.
- ☐ if there are up to 100 employees at the workplace, at least one first aid kit shall be provided.

16. There is a risk of injury if the employee:

- ☐ is not physically fit for the particular task;
- ☐ is not physically fit to perform the specific task; wears inappropriate clothing and shoes;
- ☐ is not physically fit to perform the specific task; wears inappropriate clothing and shoes; is not adequately and sufficiently trained.

17. Training of employees in labour protection issues includes:

- ☐ introductory training, on-site training (initial, recurrent, unscheduled and targeted training), thematic training on a specific occupational safety issue;
- ☐ introductory training only;
- ☐ introductory training and thematic training on a specific labour protection issue.

18. Introductory training is provided to all employees immediately:

- ☐ before hiring for work, introducing employees to labour protection in the company;
- ☐ after hiring for work, introducing employees to labour protection in the company;
- ☐ after hiring for work and passing the probationary period in the company.

19. During the initial briefing, employees are introduced to:

- ☐ the work to be performed and the instructions prepared;
- ☐ the work to be performed and the prepared instructions, practically showing safe work methods;
- ☐ prepared instructions, practically showing safe working methods.

20. A repeated briefing must be carried out within the scope of the initial briefing:

- ☐ not less than once a year, but for works with dangerous equipment, as well as for works of increased danger at least once every six months;
- ☐ at least once a year;
- ☐ at least once every six months.

21. Starting as of 1 January 2020, the minimum monthly salary is:

- ☐ 370 euros.
- ☐ 430 euros.
- ☐ 500 euros.

22. Employment contract is:

- ☐ an oral agreement between the employee and the employer prior to the commencement of work, regarding the work to be performed and remuneration;
- ☐ a written agreement between the employee and the employer prior to the commencement of work, regarding the work to be performed and remuneration;
- ☐ a written agreement between the employee and the employer concluded one month after the commencement of work, regarding the work to be performed and remuneration.

23. In order to establish whether the employee is suitable for the performance of the work entrusted to him, a probation period may be determined.

- ☐ the probation period shall not exceed 2 months;
- ☐ the probation period shall not exceed 3 months;
- ☐ the probation period shall not exceed 4 months.

Please mark the number of the answer!!!

24. The specified sign is:

1. warning sign “attention, hot surface”
2. order sign “hearing protection must be used”
3. prohibition sign “pedestrian movement is prohibited”
4. fire safety sign “fire extinguisher”
5. warning sign “attention, obstacles”
6. order sign “a helmet should be worn”
7. prohibition sign “smoking and open flame is prohibited”
8. first aid sign “stretchers”



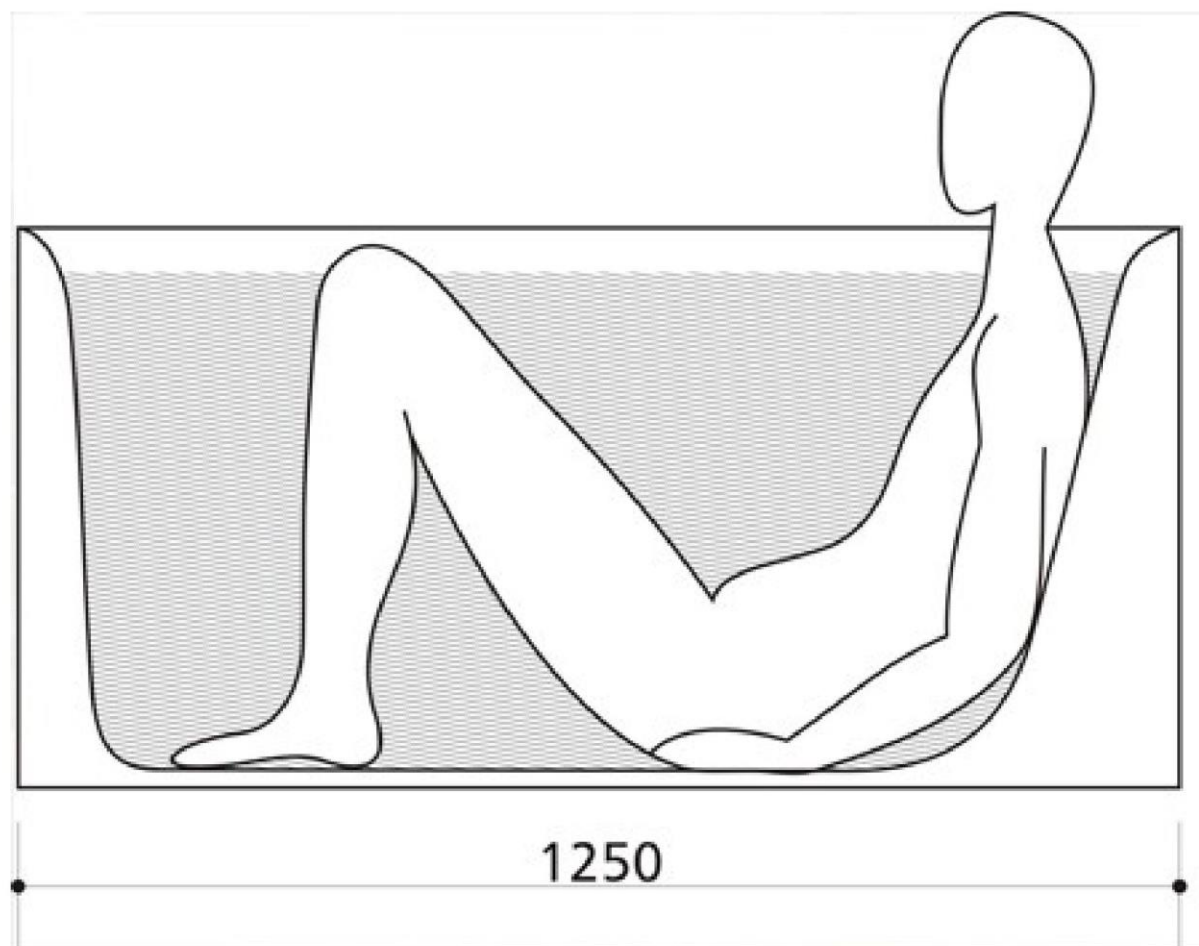
Topic:

“ERGONOMICS”

Author
Anda Zvīgule

ERGONOMICS

A. Zvīgule



Definitions

Ergonomics - a multidisciplinary branch of science focused on disciplines that study every human activity.

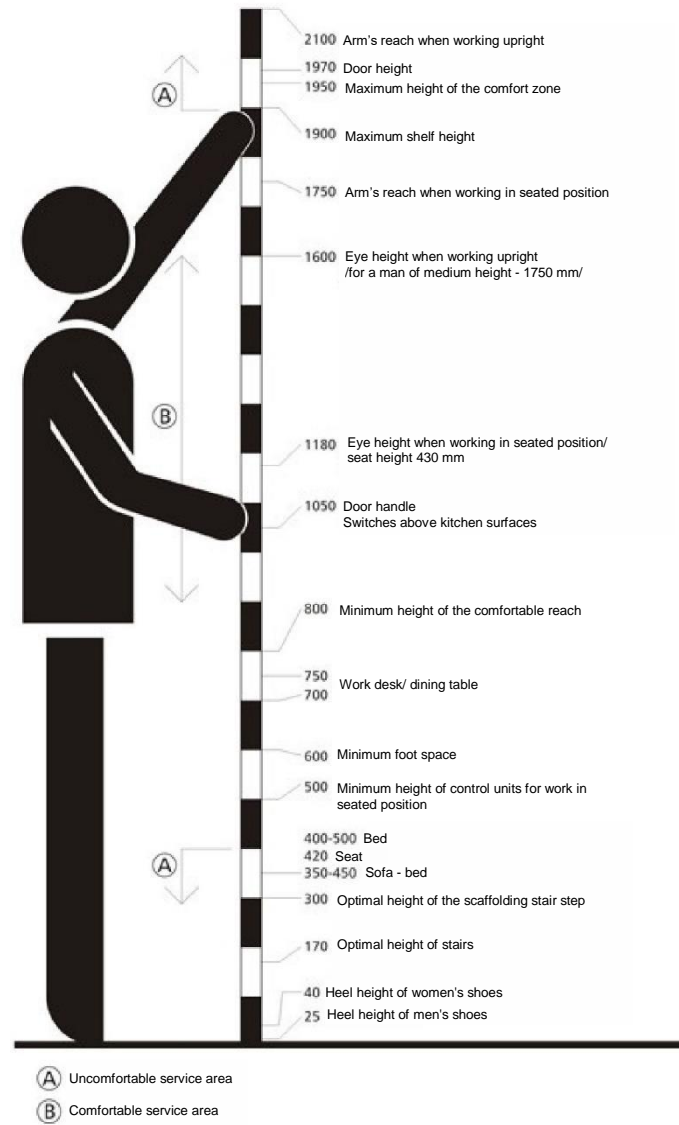
Ergonomics - the science of adaptation of work, work equipment and the workplace for the employee.

Definitions

Ergonomics - the science of the human relationship with work.

The task of ergonomics is to adapt the work process and work environment to a person's mental and physical abilities in order to ensure efficient work that does not pose a threat to human health and can be easily performed.

DIFFERENT HEIGHTS IN RELATION TO HUMAN HEIGHT

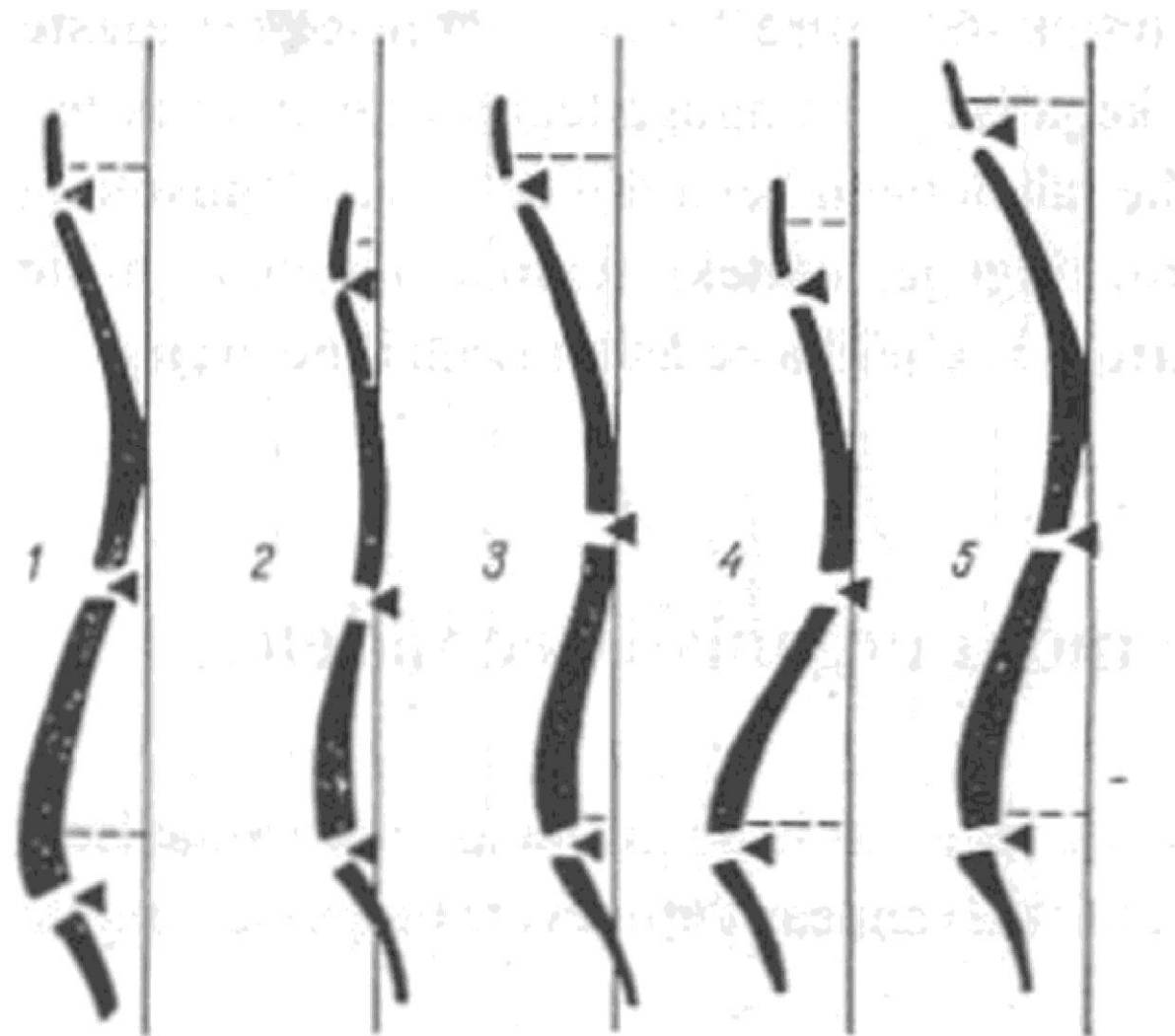


The term *Ergonomics*

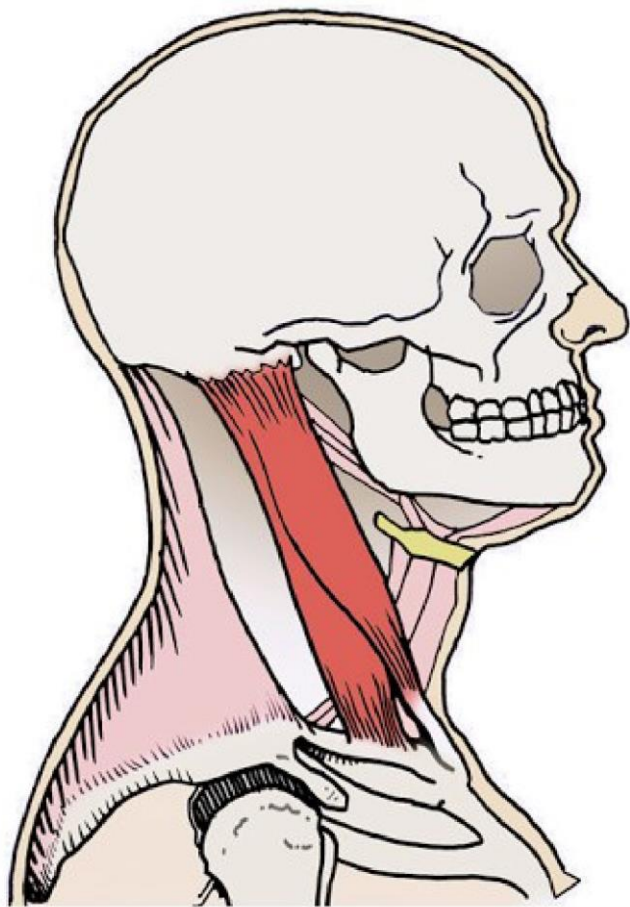
in Greek

ergon - (human) work and power,

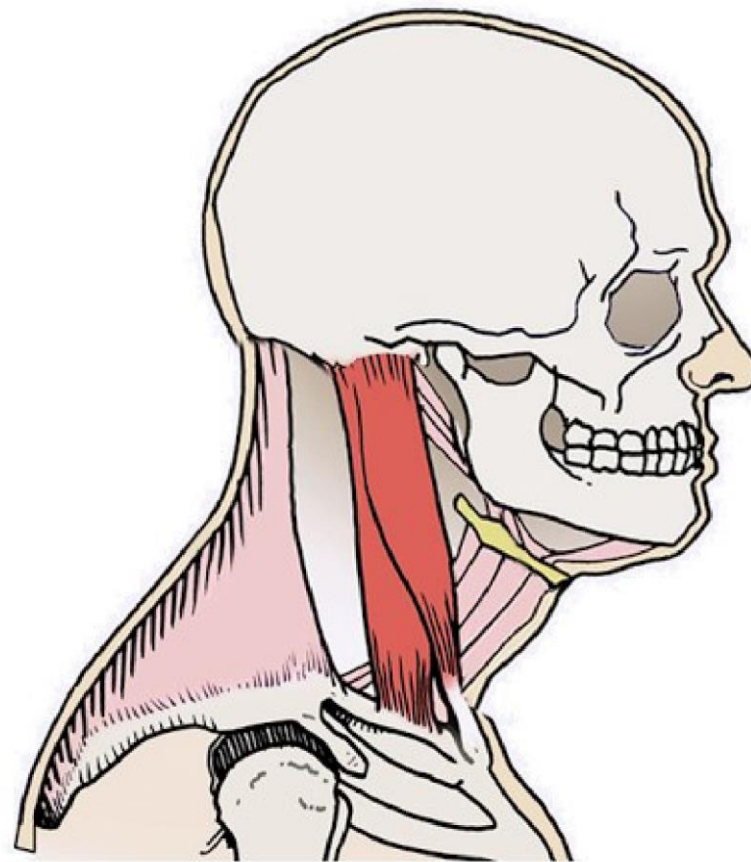
nomos - law or rules.



Normaalne pikkusega riimaku-rangluu nibujätke lihas



Lühenenud ja pinges rinnaku-rangluu nibujätke lihas



It is essentially based on human **anatomy, physiology and psychology** and evaluates the human relationship with work.

The term “ergonomics” is used in the EU Member States, but in the USA - “**human factors**”. According to the definition of the International Association of Ergonomics, “ergonomics - human factors” is a ***scientific discipline that studies the relationship between a human and the environment***. It deals with theoretical and practical research of the interaction between a human and environment (technology, tools...), acquisition and creation of the principles of technological equipment, analysis of the obtained data, environmental and technology designing, ensuring prosperity and economic efficiency of the company.

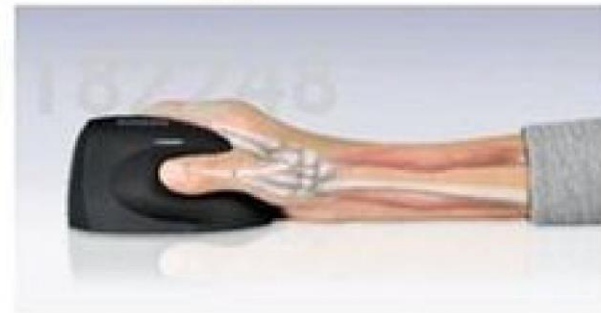
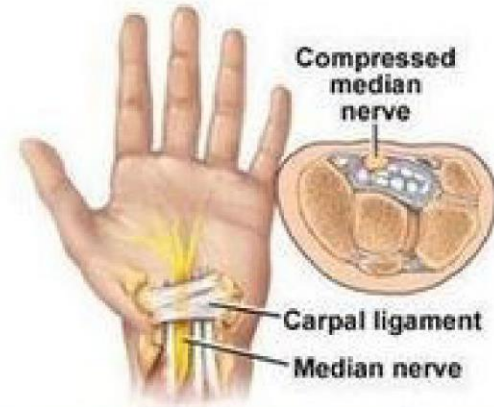
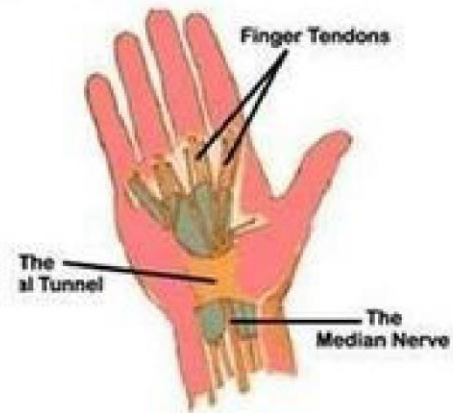
In Germany it is often called **anthropotechnics**.

The following should be taken into account in ergonomics

- Anthropometry (body size)
 - Working postures and movements
 - Physical workload
 - Mental workload
 - Human errors
 - Motivation
 - Stress
 - Fatigue
 - Age
-

The following should be taken into account in ergonomics

- **People in the system** (change of management, risk management, ergonomics of representation),
 - **Task design** (job satisfaction, manual work, equipment management, education),
 - **Equipment design** (workstation, control panel and seat, machine design, hand tools, mechanical injuries, information on the display, danger signals, safety signs, control panel, etc.),
 - **Work environment** (work area, lighting, vibration, noise, thermal stress),
 - **Work organisation** (working hours, breaks at work, employee consultations and feedback, team work),
 - Economic and social impact.
-



Store No: 1182248

Distribution of ergonomics

- load ergonomics
- cognitive ergonomics
- organisational ergonomics

Physical ergonomics

analyses the effect of physical load on the functional systems of the human body, for example:
cardiovascular system, musculoskeletal and connective tissue system, nervous system, visual organs, vocal cords, etc.

Anatomical

Anthropometric

Physiological

Biomechanical aspects of work



Cognitive ergonomics

analyses psychological or mental, emotional processes in the body, when performing work duties.

Studies mental processes and their dynamics in the course of human activity.

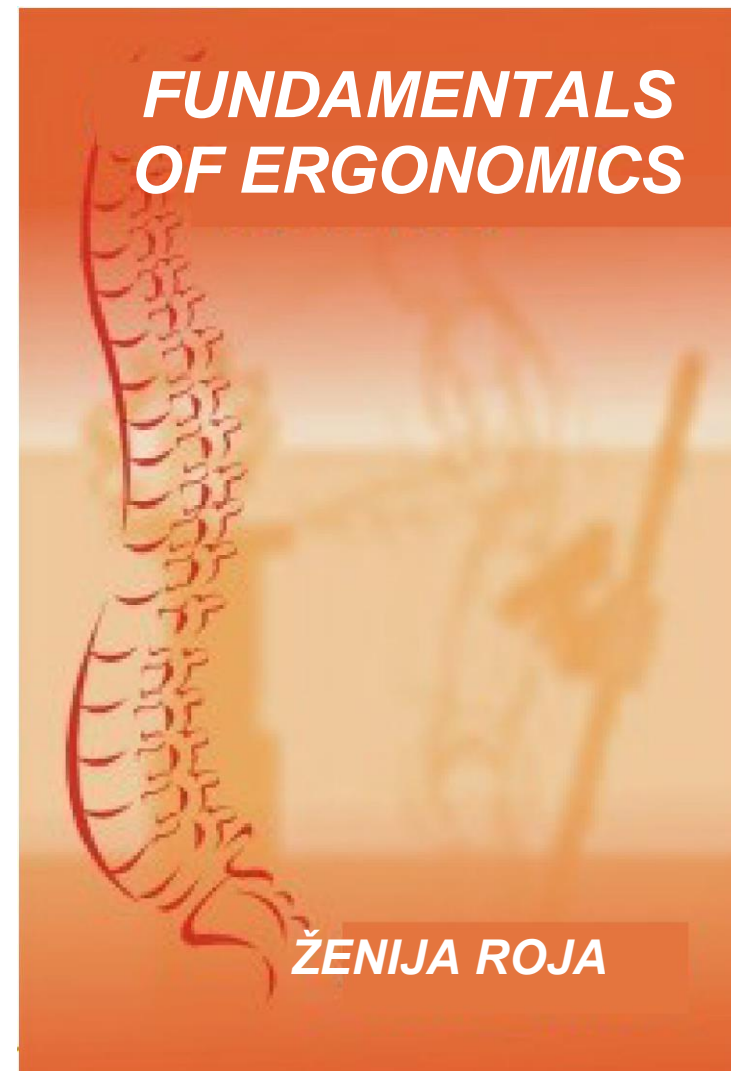
Organisational ergonomics

solves issues related to technology improvement, work design, work organisation, etc.

Studies the issues related to socio-technical systems: cooperation, group resource management, project development, etc.

OCTOBER - European Ergonomics Month (EEM)

Ženija Roja, Chairperson
of the Board of the Latvian
Ergonomics Society



Ergonomics is based on the achievements of various sciences (1)

- Psychology
 - Physiology
 - Medicine
 - Architecture
 - Sociology
 - Industrial design (technical aesthetics)
 - Biomechanics (use of muscle power)
-

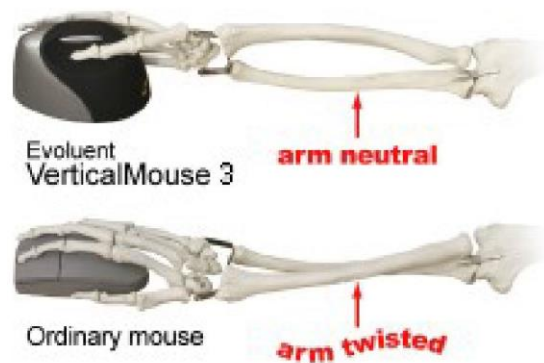
Ergonomics is based on the achievements of various sciences (2)

- Anthropometry (a science related to various measurements of a human's height and body proportions; it is used in medicine, especially in matters of human physical development and constitutional features). This is always taken into account in judicial investigations.

Ergonomics specialists adapt the construction and design of the product, as well as workplaces to a person's size and physical body, their physical power and limitations, biological needs, ability to perceive information, make decisions, as well as the ability to withstand various psychological loads (isolation, stress...).







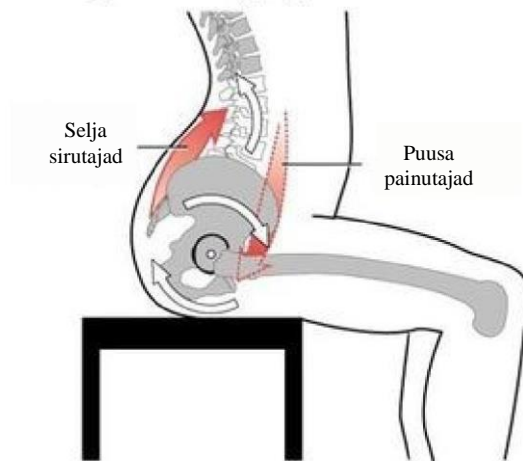




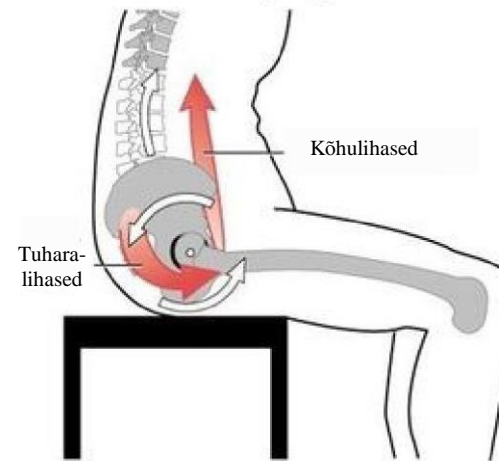
Work in seated position

MIS TOIMUB SIIS, KUI SA EI ISTU SIRGE SELJAGA?

Nõgusa seljaga istudes



Lameda seljaga istudes

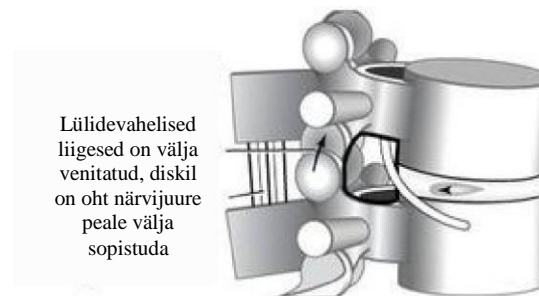


Nimetatud lihastes tekivad lühenenud asendi tõttu pinged, mis hakkavad muutma ruhti. Ebaühtlalt on koormatud ka lülisamba lülid ja diskid, tekitades juba tõsisemaid probleeme.



Ogajätkete va
helised sidemed on
lõtvunud,
lülid vahelised
liigesed on kokku
surutud

Diskis on
koormus
ebaühtlaselt
jaotunud,
närvikanal on
kitsenenud



Lülid vahelised
liigesed on välja
venitatud, diskil
on oht närvijuure
peale välja
sopistuda

Seljavalude korral saad abi füsioterapeutidelt!

Lähemalt vaata www.fysioviis.cbm

Allikas: Neumann DA "Kinesiology of the Musculoskeletal System, foundations for Physical Rehabilitation." St. Louis, Mosby, 2002

Automobiles







model “Human - machine -
environment”.



Source

<http://www.ergonomika.lv/> - guidelines, books

Topic:

“TEST: ERGONOMICS”

Author
Anda Zvīgule

Name, Surname

1. In which language is *ergon* translated as “work”?
2. What is measured when assessing postures during workload and how?
3. What do the letters SGR mean?
4. Which professions could have high psycho-emotional risks?
5. Ergonomic risks for the director of a large institution could be
6. Cabinet Regulation No. 660 “Procedures for the Performance of Internal Supervision of the Work Environment” stipulates that work environment risks shall be assessed at least a year.
7. What do you mean by “anthropometric measurements”?
8. What do you mean by “risks”?
9. How does fatigue manifest itself and how can it be measured?
10. Create one question in the ergonomic risk assessment questionnaire
11. Name 3 ergonomics specialists known in Latvia!
12. Historically, ergonomics has also addressed
13. Name 2 ergonomic risk factors in your work environment!
14. Name a book about ergonomics published in Latvia and its authors
15. If you were an ergonomics researcher, which field would you find the most exciting?

Name, Surname

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Name, Surname

1. What happens if there is too much psycho-emotional load?
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3. What is measured when evaluating biomechanical load at work and how?
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Name, Surname

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4. In which language is *ergon* translated as “work”?
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7. Ergonomic risks for a medical staff member could be
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Topic:

“ANTHROPOMETRY”

Author
Anda Zvīgule

Anthropometry

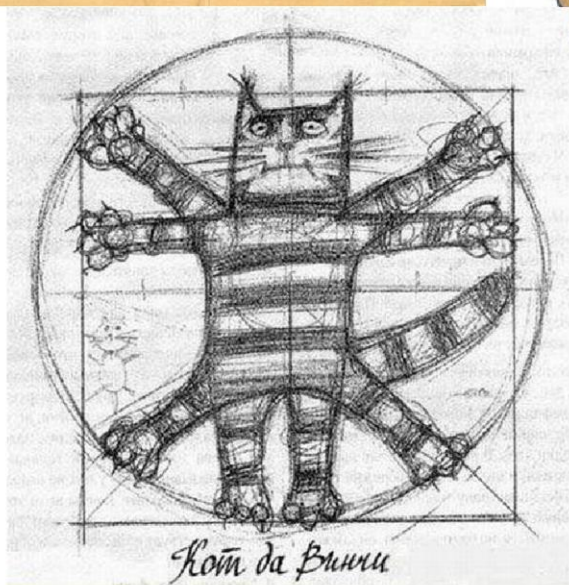
A. Zvīgule
2020

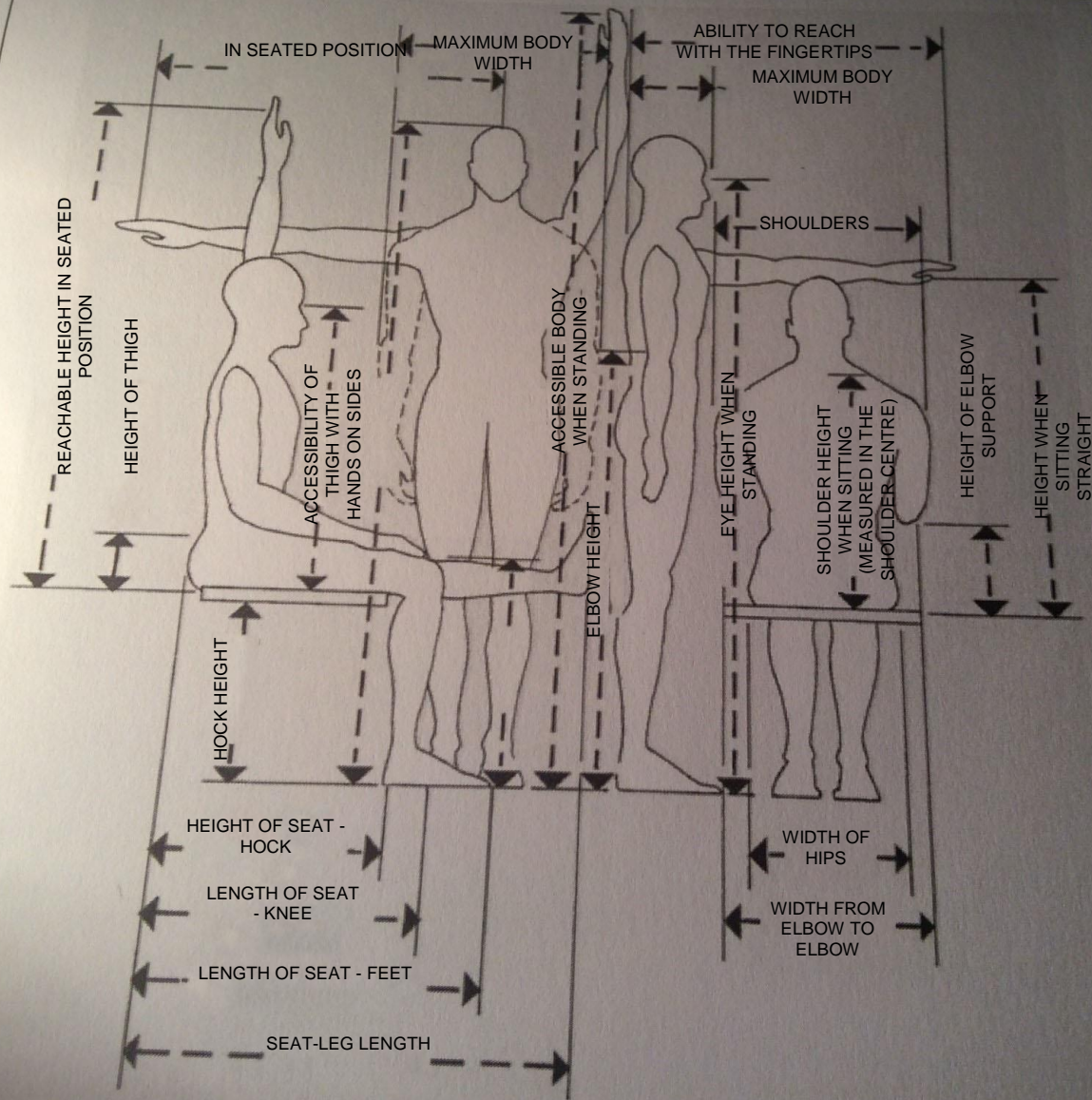
121



1000. 1111. 1112. 1113. 1114. 1115. 1116. 1117. 1118. 1119. 1120. 1121. 1122. 1123. 1124. 1125. 1126. 1127. 1128. 1129. 1130. 1131. 1132. 1133. 1134. 1135. 1136. 1137. 1138. 1139. 1140. 1141. 1142. 1143. 1144. 1145. 1146. 1147. 1148. 1149. 1150. 1151. 1152. 1153. 1154. 1155. 1156. 1157. 1158. 1159. 1160. 1161. 1162. 1163. 1164. 1165. 1166. 1167. 1168. 1169. 1170. 1171. 1172. 1173. 1174. 1175. 1176. 1177. 1178. 1179. 1180. 1181. 1182. 1183. 1184. 1185. 1186. 1187. 1188. 1189. 1190. 1191. 1192. 1193. 1194. 1195. 1196. 1197. 1198. 1199. 1200. 1201. 1202. 1203. 1204. 1205. 1206. 1207. 1208. 1209. 1210. 1211. 1212. 1213. 1214. 1215. 1216. 1217. 1218. 1219. 1220. 1221. 1222. 1223. 1224. 1225. 1226. 1227. 1228. 1229. 1230. 1231. 1232. 1233. 1234. 1235. 1236. 1237. 1238. 1239. 1240. 1241. 1242. 1243. 1244. 1245. 1246. 1247. 1248. 1249. 1250. 1251. 1252. 1253. 1254. 1255. 1256. 1257. 1258. 1259. 1260. 1261. 1262. 1263. 1264. 1265. 1266. 1267. 1268. 1269. 1270. 1271. 1272. 1273. 1274. 1275. 1276. 1277. 1278. 1279. 1280. 1281. 1282. 1283. 1284. 1285. 1286. 1287. 1288. 1289. 1290. 1291. 1292. 1293. 1294. 1295. 1296. 1297. 1298. 1299. 1300. 1301. 1302. 1303. 1304. 1305. 1306. 1307. 1308. 1309. 1310. 1311. 1312. 1313. 1314. 1315. 1316. 1317. 1318. 1319. 1320. 1321. 1322. 1323. 1324. 1325. 1326. 1327. 1328. 1329. 1330. 1331. 1332. 1333. 1334. 1335. 1336. 1337. 1338. 1339. 1340. 1341. 1342. 1343. 1344. 1345. 1346. 1347. 1348. 1349. 1350. 1351. 1352. 1353. 1354. 1355. 1356. 1357. 1358. 1359. 1360. 1361. 1362. 1363. 1364. 1365. 1366. 1367. 1368. 1369. 1370. 1371. 1372. 1373. 1374. 1375. 1376. 1377. 1378. 1379. 1380. 1381. 1382. 1383. 1384. 1385. 1386. 1387. 1388. 1389. 1390. 1391. 1392. 1393. 1394. 1395. 1396. 1397. 1398. 1399. 1400. 1401. 1402. 1403. 1404. 1405. 1406. 1407. 1408. 1409. 1410. 1411. 1412. 1413. 1414. 1415. 1416. 1417. 1418. 1419. 1420. 1421. 1422. 1423. 1424. 1425. 1426. 1427. 1428. 1429. 1430. 1431. 1432. 1433. 1434. 1435. 1436. 1437. 1438. 1439. 1440. 1441. 1442. 1443. 1444. 1445. 1446. 1447. 1448. 1449. 1450. 1451. 1452. 1453. 1454. 1455. 1456. 1457. 1458. 1459. 1460. 1461. 1462. 1463. 1464. 1465. 1466. 1467. 1468. 1469. 1470. 1471. 1472. 1473. 1474. 1475. 1476. 1477. 1478. 1479. 1480. 1481. 1482. 1483. 1484. 1485. 1486. 1487. 1488. 1489. 1490. 1491. 1492. 1493. 1494. 1495. 1496. 1497. 1498. 1499. 1500. 1501. 1502. 1503. 1504. 1505. 1506. 1507. 1508. 1509. 1510. 1511. 1512. 1513. 1514. 1515. 1516. 1517. 1518. 1519. 1520. 1521. 1522. 1523. 1524. 1525. 1526. 1527. 1528. 1529. 1530. 1531. 1532. 1533. 1534. 1535. 1536. 1537. 1538. 1539. 1540. 1541. 1542. 1543. 1544. 1545. 1546. 1547. 1548. 1549. 1550. 1551. 1552. 1553. 1554. 1555. 1556. 1557. 1558. 1559. 1560. 1561. 1562. 1563. 1564. 1565. 1566. 1567. 1568. 1569. 1570. 1571. 1572. 1573. 1574. 1575. 1576. 1577. 1578. 1579. 1580. 1581. 1582. 1583. 1584. 1585. 1586. 1587. 1588. 1589. 1590. 1591. 1592. 1593. 1594. 1595. 1596. 1597. 1598. 1599. 1600. 1601. 1602. 1603. 1604. 1605. 1606. 1607. 1608. 1609. 1610. 1611. 1612. 1613. 1614. 1615. 1616. 1617. 1618. 1619. 1620. 1621. 1622. 1623. 1624. 1625. 1626. 1627. 1628. 1629. 1630. 1631. 1632. 1633. 1634. 1635. 1636. 1637. 1638. 1639. 1640. 1641. 1642. 1643. 1644. 1645. 1646. 1647. 1648. 1649. 1650. 1651. 1652. 1653. 1654. 1655. 1656. 1657. 1658. 1659. 1660. 1661. 1662. 1663. 1664. 1665. 1666. 1667. 1668. 1669. 1670. 1671. 1672. 1673. 1674. 1675. 1676. 1677. 1678. 1679. 1680. 1681. 1682. 1683. 1684. 1685. 1686. 1687. 1688. 1689. 1690. 1691. 1692. 1693. 1694. 1695. 1696. 1697. 1698. 1699. 1700. 1701. 1702. 1703. 1704. 1705. 1706. 1707. 1708. 1709. 1710. 1711. 1712. 1713. 1714. 1715. 1716. 1717. 1718. 1719. 1720. 1721. 1722. 1723. 1724. 1725. 1726. 1727. 1728. 1729. 1730. 1731. 1732. 1733. 1734. 1735. 1736. 1737. 1738. 1739. 1740. 1741. 1742. 1743. 1744. 1745. 1746. 1747. 1748. 1749. 1750. 1751. 1752. 1753. 1754. 1755. 1756. 1757. 1758. 1759. 1760. 1761. 1762. 1763. 1764. 1765. 1766. 1767. 1768. 1769. 1770. 1771. 1772. 1773. 1774. 1775. 1776. 1777. 1778. 1779. 1780. 1781. 1782. 1783. 1784. 1785. 1786. 1787. 1788. 1789. 1790. 1791.

Handwritten signature

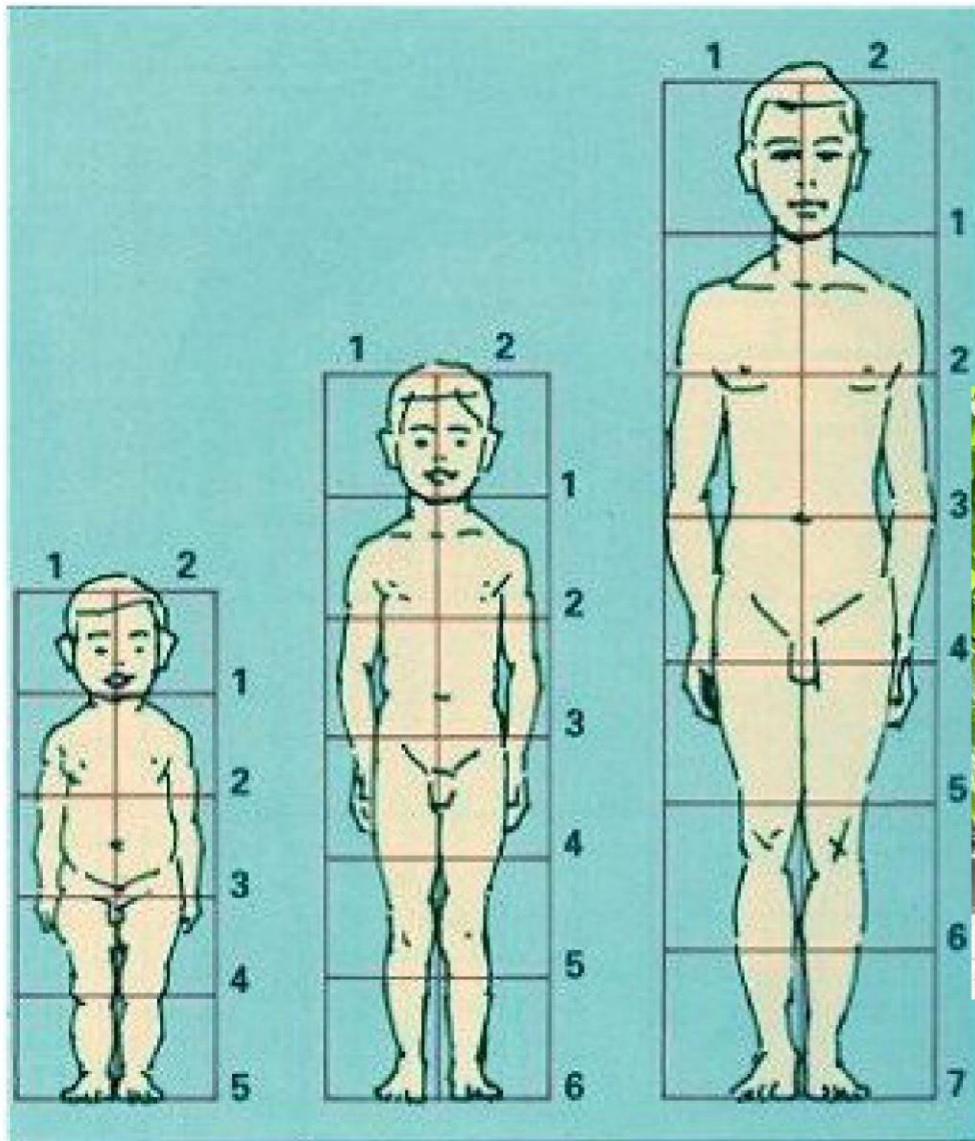




Anthropology - studies human biological development

- Anthropometry - a part of the anthropological science that deals with the study of human size.
- A. - the science of the size of the human body.
- Morphology - a part of anthropology that studies the structure of the human body (body structure) depending on age, gender, occupation, habits, natural and social conditions, etc.

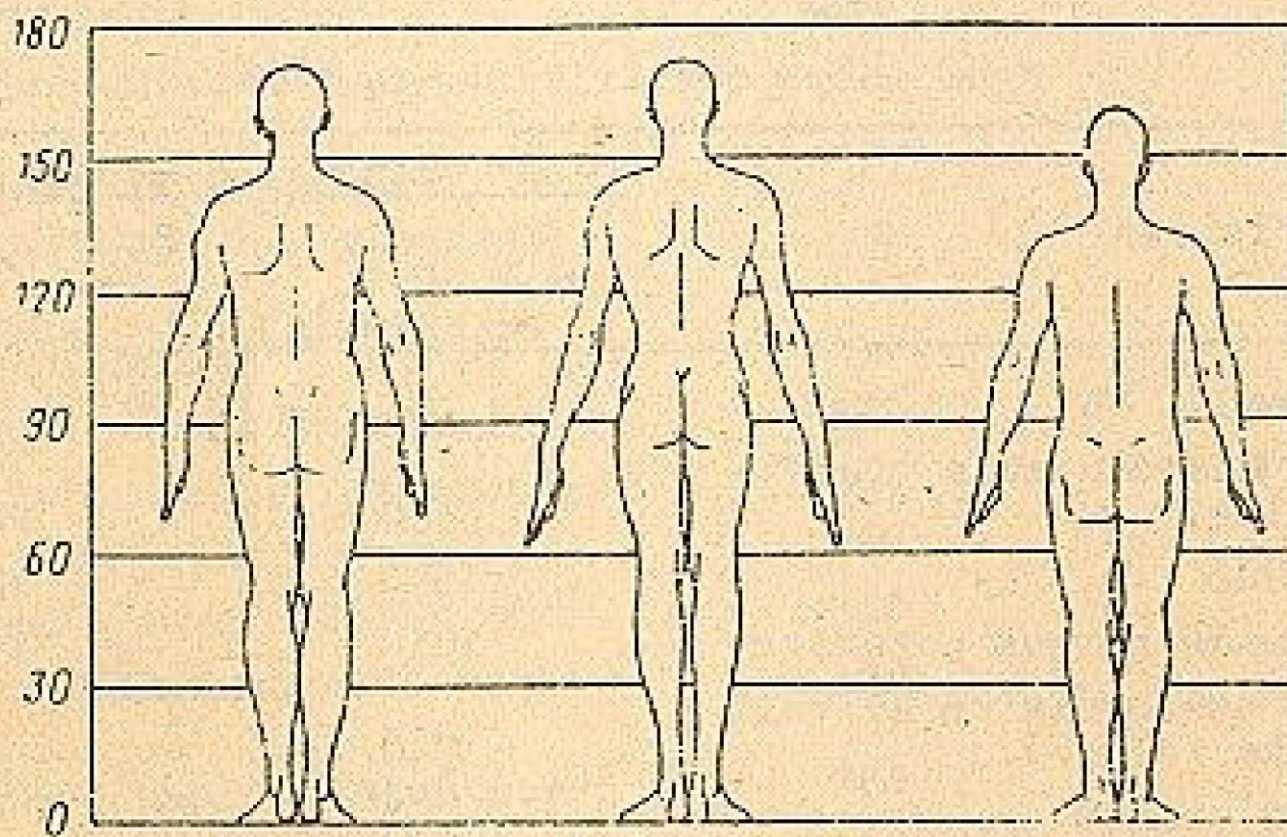




6 main features of body structure

- Body length
- Chest size
- Weight
- Proportions
- Body building
- Posture

Pikkus, cm



Europiid

Negriid

Mongoliid

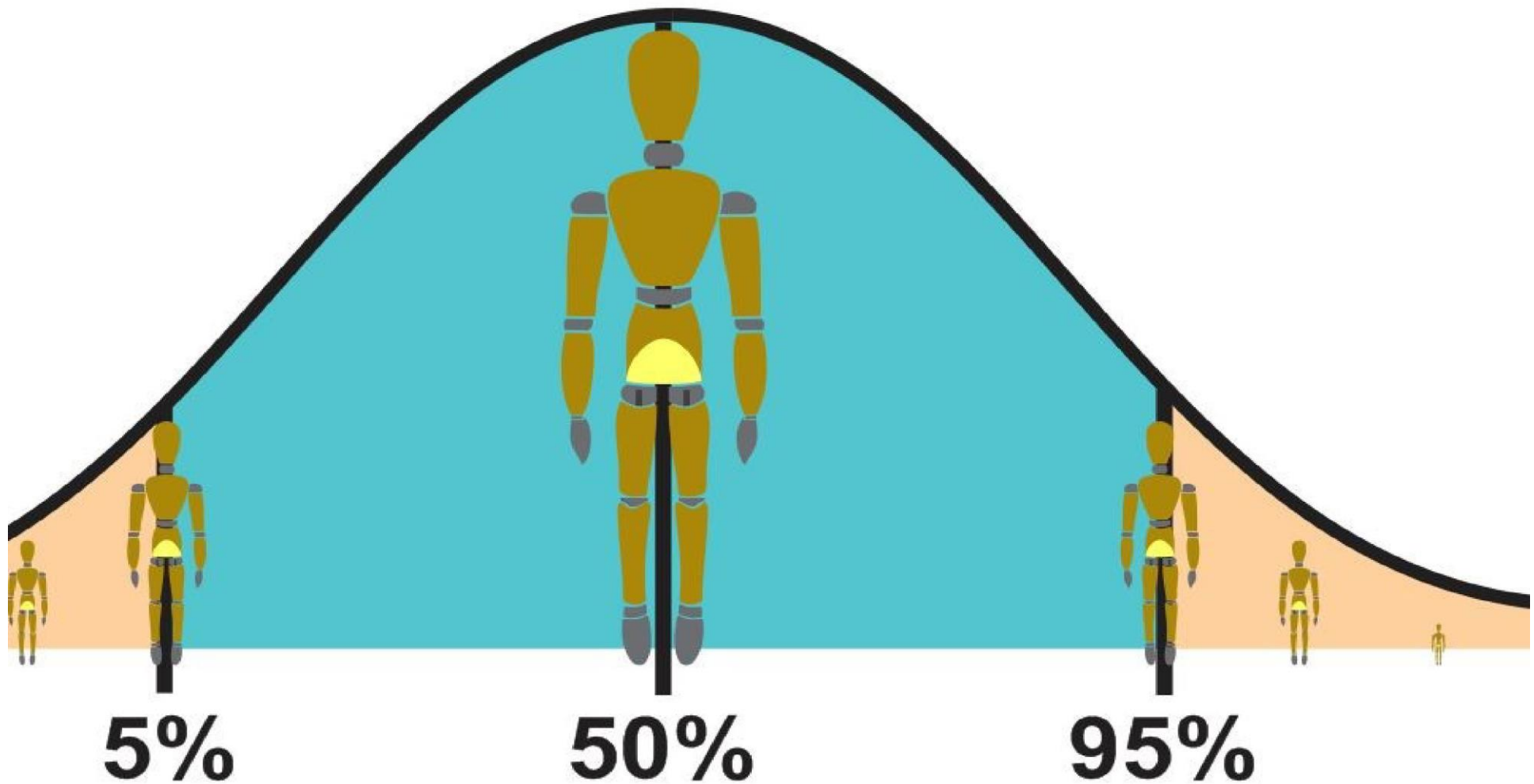
When designing workplaces, it is not possible to create work tables, furniture and other objects, satisfying all sizes - expensive.

“Average measures” satisfy 90% of the population

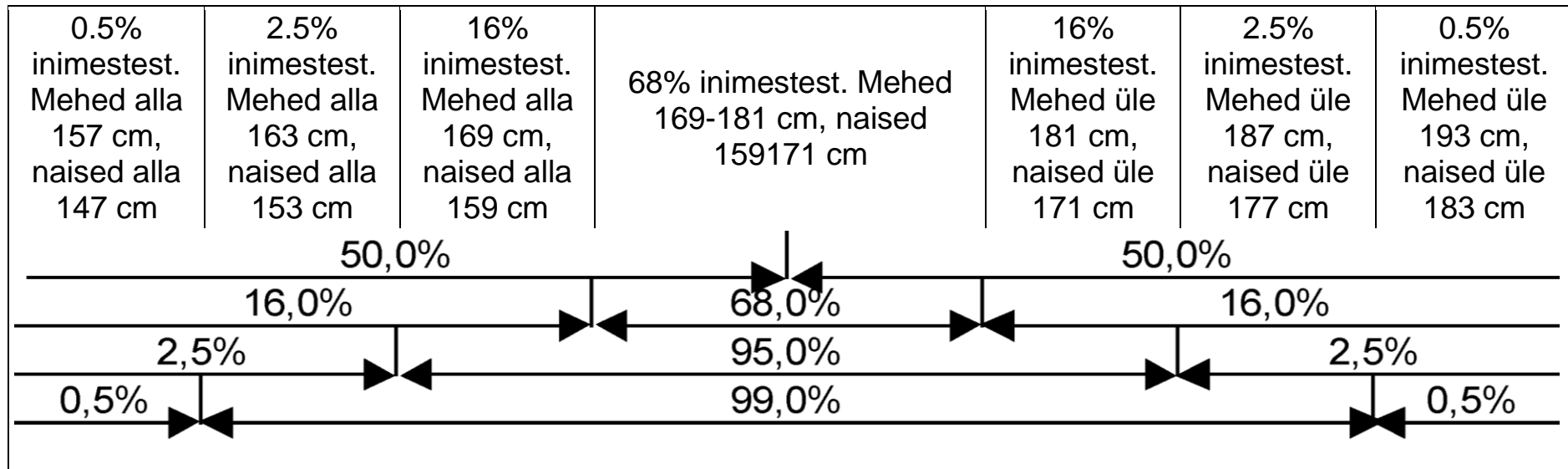
5% - too tall

5% - too short

ro de pessoas com determinada medida



Normal distribution of human height

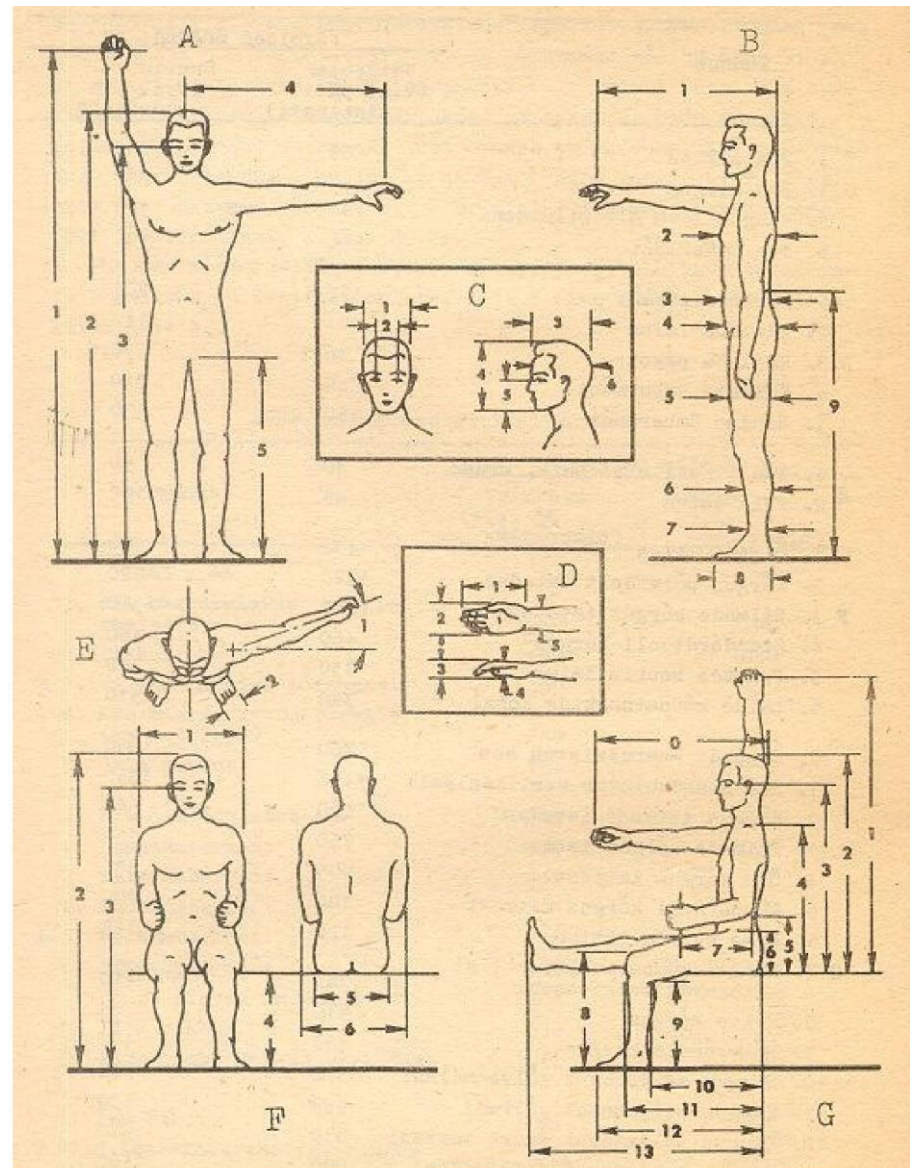


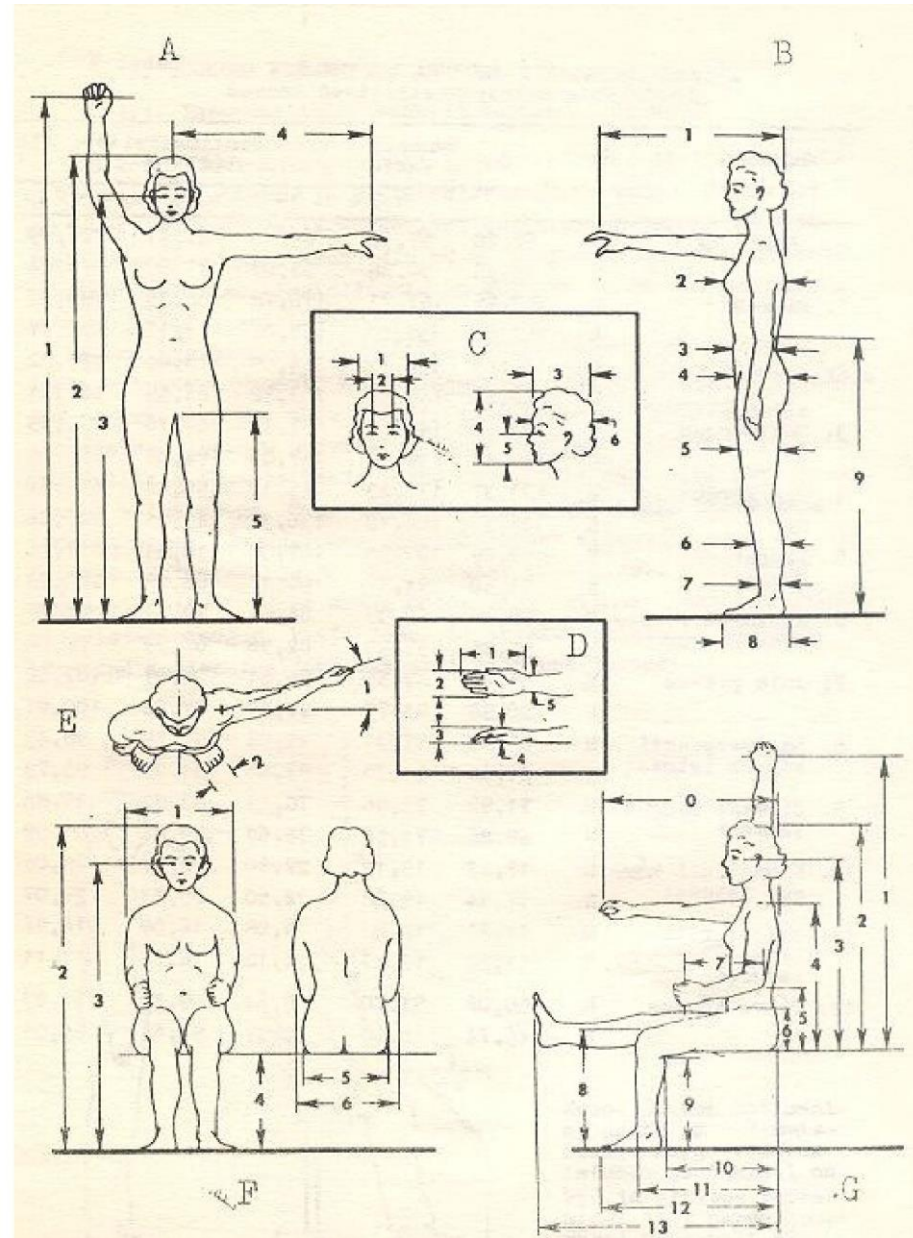
The essential measurements, when compiling sizes and standards, differ for men and women



Clothing sizes

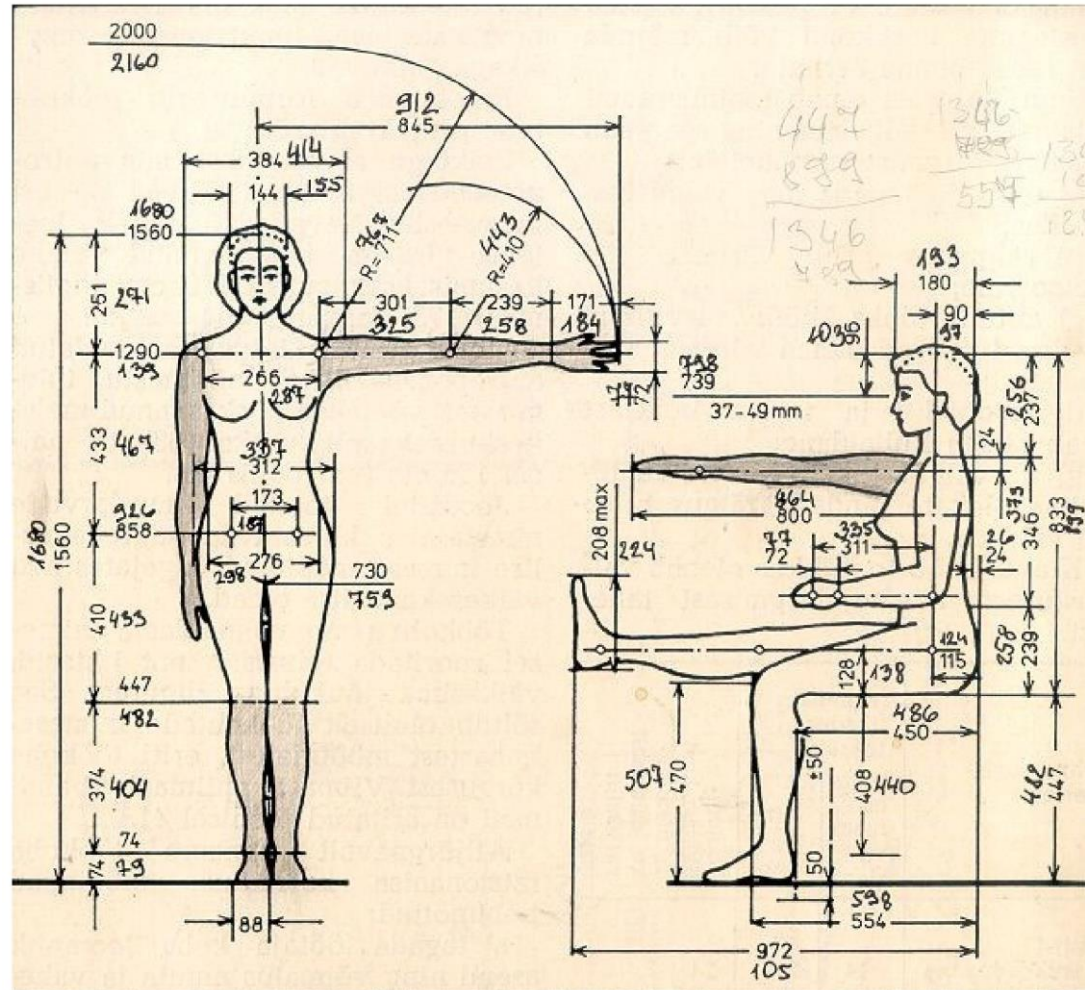
| Rinnaümberrmõõt | Euroopa | Saksamaa, Skandinaavia | Inglismaa | USA | |
|------------------------|----------------|-------------------------------|------------------|------------|------------|
| 76-80 | 36 | 32-34 | 8 | 6 | XS |
| 84 | 38 | 36 | 10 | 8 | S |
| 88 | 40 | 38 | 12 | 10 | S |
| 92 | 42 | 40 | 14 | 12 | G |
| 96 | 44 | 42 | 16 | 14 | G |
| 100 | 46 | 44 | 18 | 16 | L |
| 104 | 48 | 46 | 20 | 18 | XL |
| 110.112 | 50 | 48 | 22 | 20 | XXL |
| 116, 117 | 52 | 50 | 24 | 22 | |
| 122 | | 52 | 26 | | |
| 127, 128 | | 54 | 28 | | |
| 132, 134 | | 56 | 30 | | |





Somatography - human “scheme”

(designers and project makers are interested in)



Anthropometric data - 4 classes

1. Very important information

If this is not taken into account, the designed product can be dangerous to life

For example, a bath - human weight, width, length of sleeping, stability of the bath tub, height of the bath tub, when a person gets up, hand swing...

Anthropometric data - 4 classes

2. Important information

Calculations may vary more or less

For example, a bath - leg lengths, when sitting or lying down, arms outstretched - how far should taps or mixers be placed, shoulder width - a person cannot “fit”, when lying down, sitting - so that they can stretch their legs, but in turn, there is room to push against, not to slip and drown...

Anthropometric data - 4 classes

3. Information to be considered

Little impact on human comfort in the bath tub, but more relevant to the designing nuances in the room

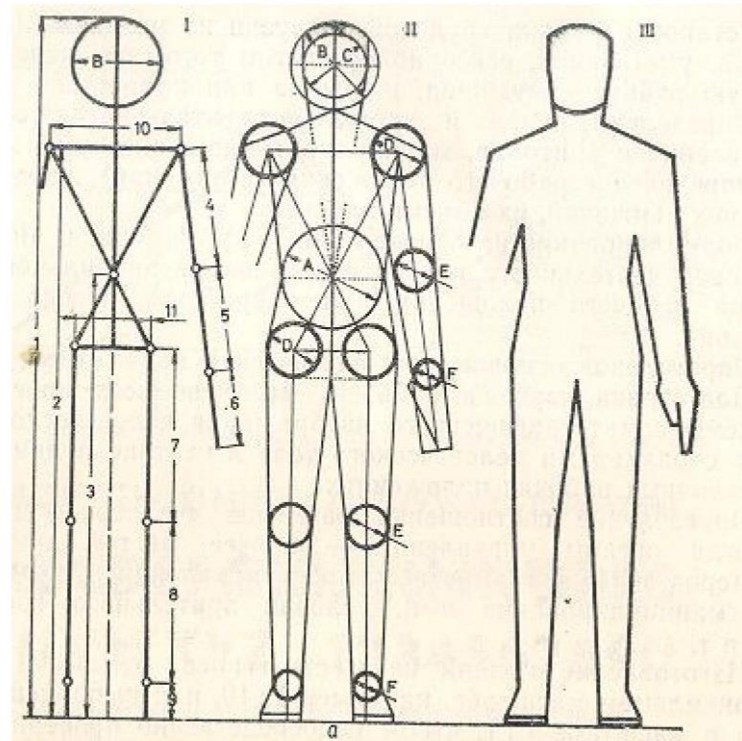
Anthropometric data - 4 classes

- **Non-essential information**

Individual desires...

From the point of view of different measurements - eye height while sitting in the bath tub, different circumferences of body parts and cross-sectional data

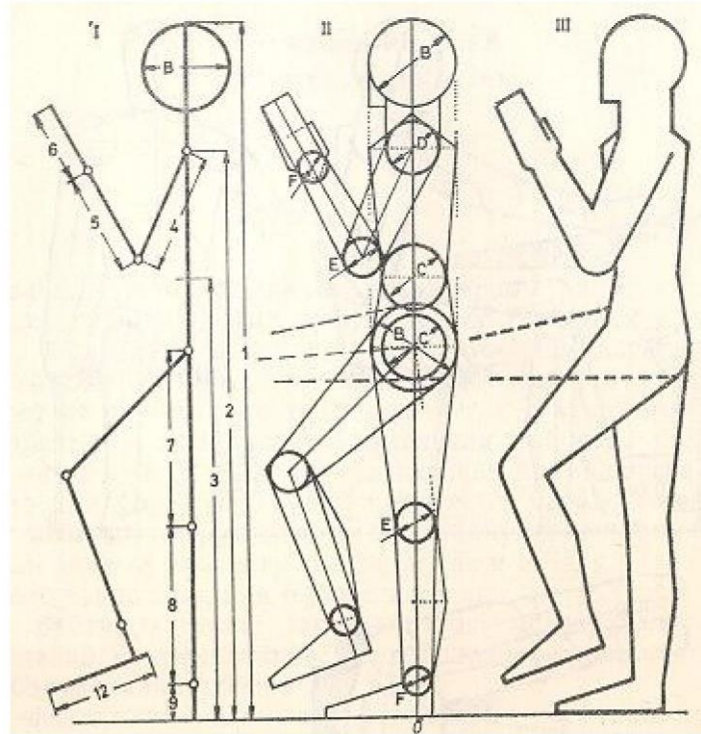
Frontal plane



Skemaatiliselt kujutatud inimese figuuri andmed

| Proportsiooni de tabel | Mõõt | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Mõõt | A | B | C | D | E | F |
|------------------------|------|-----|-----|-----|----|----|----|----|----|---|----|----|----|------|----|----|-----|-----|-----|---|
| | cm | 175 | 143 | 111 | 30 | 26 | 19 | 44 | 40 | 9 | 33 | 19 | 27 | Diam | 26 | 22 | 16 | 13 | 10 | 7 |
| | % | 100 | 82 | 64 | 17 | 15 | 11 | 25 | 23 | 5 | 19 | 11 | 15 | % | 15 | 13 | 9.1 | 7.4 | 5.7 | 4 |

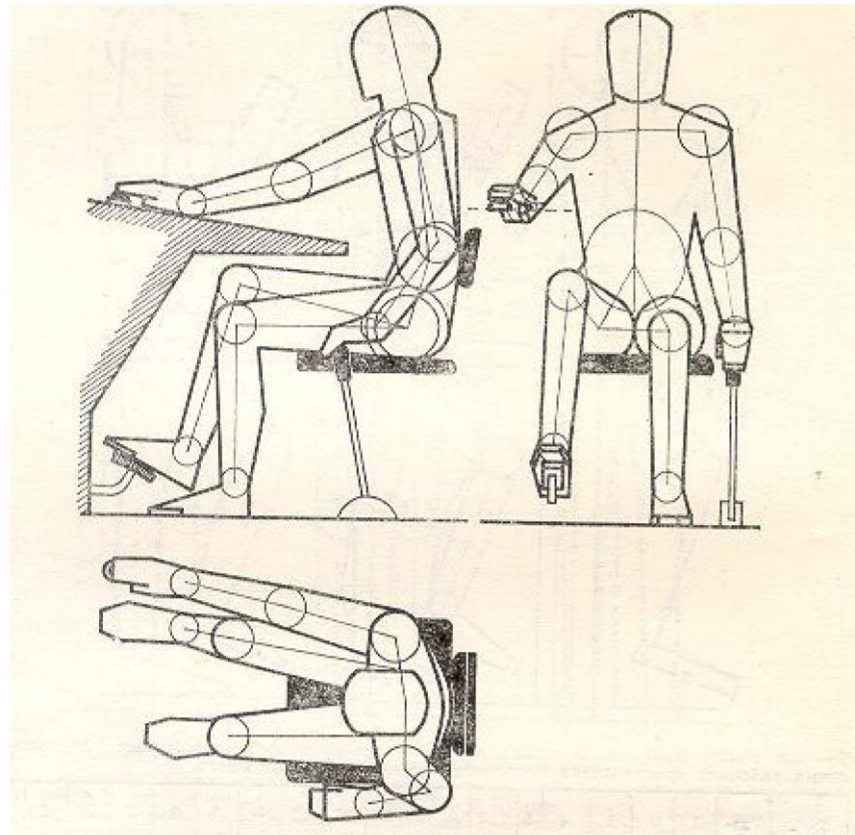
Sagittal plane (side plane)




Skemaatiliselt kujutatud inimese figuuri andmed

| Proportsiooni de tabel | Mõõt | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Mõõt | A | B | C | D | E | F |
|------------------------|------|-----|-----|-----|----|----|----|----|----|---|----|----|----|------|----|----|-----|-----|-----|---|
| | cm | 175 | 143 | 111 | 30 | 26 | 19 | 44 | 40 | 9 | 33 | 19 | 27 | Diam | 26 | 22 | 16 | 13 | 10 | 7 |
| | % | 100 | 82 | 64 | 17 | 15 | 11 | 25 | 23 | 5 | 19 | 11 | 15 | % | 15 | 13 | 9.1 | 7.4 | 5.7 | 4 |

Computer programs (SolidEDGE or Excel)



| Group 13.110; 13.180 | | |
|---|---|------------------------------|
|  | Machine safety.
Human body dimensions.
Part 3: Anthropometric data | LVS EN
547-3:1996 |
| | (idt. EN 547-3:1996) | |

Safety of machinery — Human body measurement — Part 3: Anthropometric data

1(9)

Descriptors: machine safety, human factors, accident prevention, dimensions
anthropometric characteristics, calculations, dimensional openings, holes,
human body

EUROPEAN STANDARD EN 547-3: 1996

HAS THE STATUS OF THE LATVIAN STANDARD

Foreword to the national standard

This European Standard was approved by the European Committee for Standardization on CEN on 15 November 1996.

This standard has been prepared for adaptation as the Latvian standard by the Association of Entrepreneurs of the Mechanical Engineering and Metalworking Industry.

The standard has been reviewed and approved by the Latvian Technical Committee for Standardization on 14 December 1999 and is identical to the European standard EN 547-3:1996.

Translation of the standard is based on the English wording. The standard is provided in English and Latvian. In the case of any disagreements the English wording shall prevail.

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VSIA LATVIJAS STANDARTS

K. Valdemāra iela 157, Rīga, LV-1013

Registration No. 3319

Date 29.12.1999

Ergonomic anthropometry

Anthropometric measurements determine a person's height, weight, chest circumference, muscle development, subcutaneous fat layer; measures the skull, limbs, separate parts of the body in connection with the design of the subject environment, various equipment and facilities, the design and construction of clothing, furniture, advertising, premises etc., organisation of the outdoor and indoor environment, including with the design of buildings and structures

Question

Why do women have smaller feet than men?

The answer

To be able to stand closer to the stove...

National saying

The one who has not yet been fired wakes up early.



Experience data network (Repertory grids)

one of the qualitative research methods can be used to provide ergonomic solutions in the process of designing various products and the environment. In order to determine the principles of good design, a precise functional analysis of the designed object must be performed.

George Kelly (1950)

Donald Norman (1988)

answer to the question: “how easily any user is able to”:

- determine the function of the object (product/ device/ environment) or what it is intended for;
- what actions are possible;
- identify and/or plan actions between the purpose of the activity and the physical activity;
- take action;
- to state in what status the system (human - machine - environment) is;
- to state whether the system (human - machine - environment) is in a state desired for operation;
- to determine the interpretation of the state of an existing system.

References

Knoll,
Office Ergonomics Handbook

Office Ergonomics Practical solutions for a safer
workplace

Neville A. Stanton, Mark S. Young. A Guide to
Methodology in Ergonomics

Topic:

“WORKLOAD DETERMINATION METHODS”

Author
Anda Zvīgule

Workload determination methods

A. Zvīgule

***SGR* - Key load indicator method**

Developed by the German Federal Institute for Occupational Safety and Health.

Bundesanstalt für Arbeitsschutz und Arbeitsmedizin - BAuA

Modified at the University of Latvia, applying five risk levels to the Finnish 5-point rating scale.

SGR - A (load lifting and moving) (carrying)

SGR - B (pushing or pulling weights)

SGR - C (monotonous and frequent manual operations)

SGR - Lifting and moving weights

- Mass indicator M
- Status indicator S
- Operating conditions indicator A
- Intensity indicator I

$$DS = (M + S + A) \times I$$

***SGR* - B (pulling and pushing weights)**

Indicators

- **M** - mass of the object to be moved;
- **S** - body condition of the employee;
- **A** - work performance conditions;
- **I** - working time/ intensity.

***SGR -C* (frequent manual operations)**

Indicators

- **S** - force required for operations;
- **O** - organisational conditions;
- **A** - working conditions;
- **P** - working position;
- **K** - hand position and movements;
- **I** - work intensity.

NIOSH equation
Recommended lifting and moving weight limit

American National Institute for Occupational Safety and Health

National Institute for Occupational Safety and Health

Human biomechanical and physiological criteria are met.

Computer program *ErgoEASER*

Recommended mass limit

$$\text{RML (kg)} = \text{SK} \times \text{HR} \times \text{VR} \times \text{DR} \times \text{AR} \times \text{BR} \times \text{SR}$$

where,

-
- SK - load constant = 23 kg
 - HR - Horizontal multiplier (characterises the distance from the midline of the foot to the middle of the wrist while holding the weight)
 - VR - Vertical multiplier (characterises the distance from the floor to the hands at the beginning of lifting)
 - DR - Distance multiplier (describes the distance up to which the weight is lifted)
 - AR - Asymmetry multiplier (characterises the size of the angle from 0 ... 900, which is formed when the body is bending)
 - BR - Frequency (frequency) multiplier (characterises the lifting frequency per minute)
 - SR - Grip conditions multiplier (describes the conditions under which the weight is lifted)

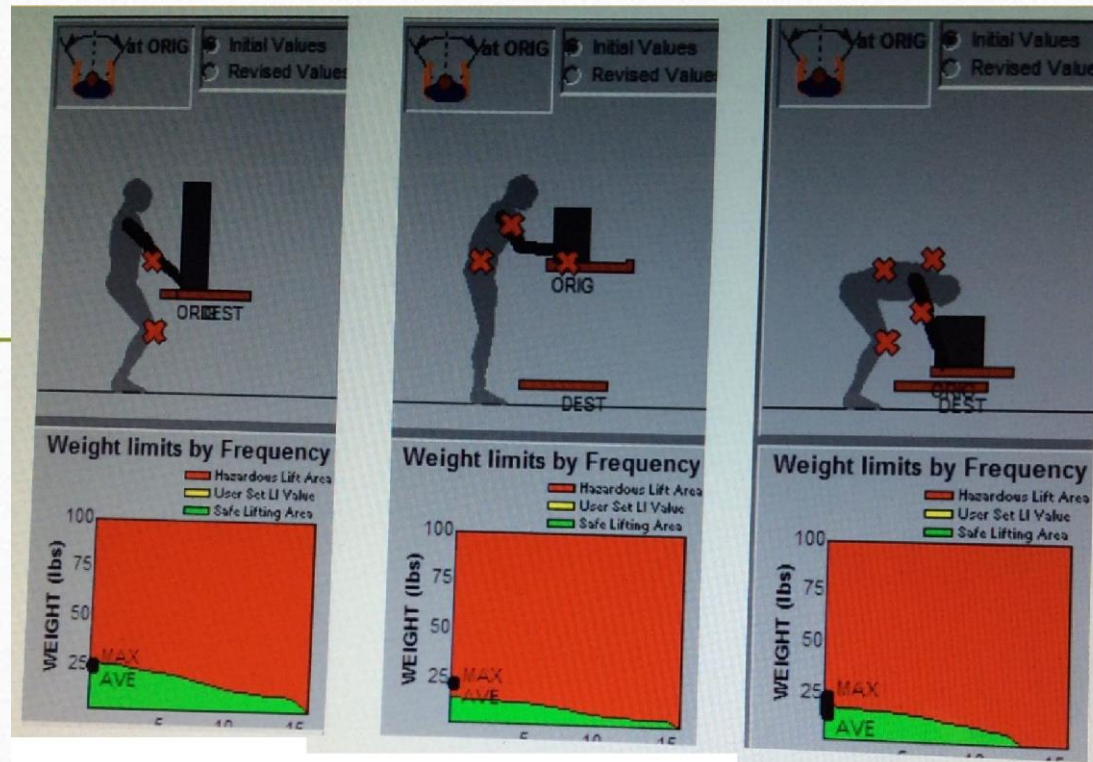


Fig. 2.15 Computer program ErgoEASER shows the ergonomically incorrect working posture in construction when lifting and moving loads on the lifting index $C_i \geq 2$

This leads to the conclusion that in their daily work employees exceed the RML. Therefore, ohmic intervention is needed and solutions could include: reducing the use of lifting aids for lifting and moving, reducing the distance at which the mass must be moved, reducing the number of turns and tilting movements, improving work organisation and work

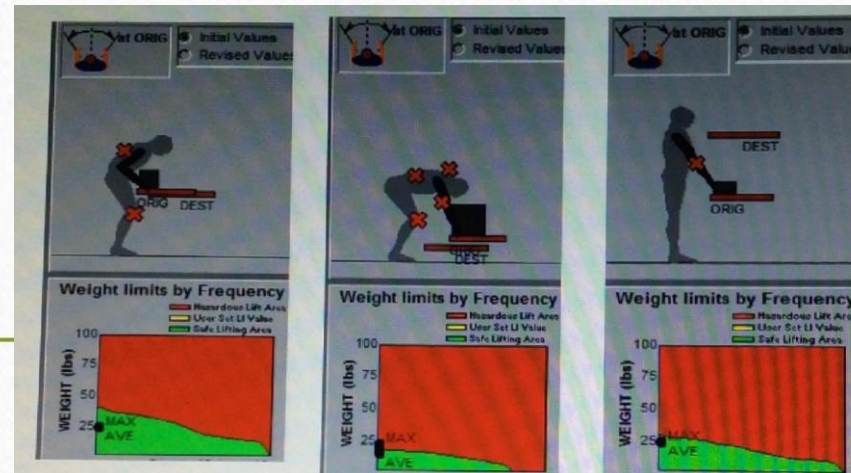


Fig. 2.14. Ergonomically incorrect working postures in woodworking, lifting and moving loads on the lifting index $C_i \geq 2$ are displayed by the computer program ErgoEASER

The red and green areas marked in the graphics indicate on the relation between the lifting weight limit and the lifting frequency. The calculations of the computer program show that in order to avoid the problems caused by overload, the mass of 30 ± 5 kg must not be lifted more than 20 ... 30 times.

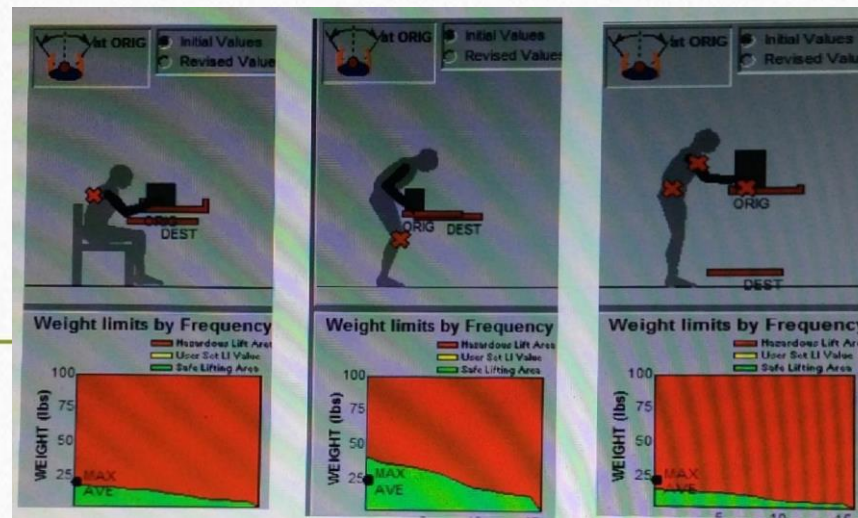


Fig. 2.16 Computer program ErgoEASER shows the ergonomically incorrect working posture in metal processing when lifting and moving loads on the lifting index $C_i \geq 2$

Conclusion. All three studied sectors have employees (55 ... 70%), who lift and move more than 2 times the permissible limit - lifting index $C_i = \geq 2$ (see Table 2). They have increased physical activity, which may adversely affect their ability to work. In order to solve this issue, ergonomic intervention in production processes is required.

Table 2.9

Rapid exposure control for ergonomic risks (REC method) - assesses how the dynamic and static work affects certain parts of the body

Survey data

- load on the upper back,
- shoulder line
- wrist base

Work stress index computer program *ErgoIntelligence*

- **Effort nature**

According to the Borg scale - small - sometimes significant - large - very large - extreme

- **Effort duration per shift or cycle**

<10%, 10-29%, 30-49%, 50-79%, >80%

- **Tension episodes (frequency) per minute**

<4, 4-8, 9-14, 15-19, >20

- **Hand/ palm positions**

In the natural state - may change slightly - extremely tense position - extreme

- **Work pace**

Very slow - slow - medium - fast - very fast

- **Working hours per day**

<1, 1-2, 2-4, 4-8, >

Work stress index - SI

- <3 - safe work, practically no stress
- 3-5 - working stress is low or not pronounced
- 5-7 - work stress poses a risk of possible error in the work process
- > 7 - high working stress, which is dangerous, possible accidents during work

Fatigue index

Fatigue index - computer program HSE Fatiq index

- **CUMULATIVE COMPONENT**

the effect of work load on fatigue

- **TEMPORAL COMPONENT**

the work pace during the shift and the speed of execution of the task

- **INTERRUPTION COMPONENT**

The need for breaks and their frequency

NI values

| | |
|--------|-----------------|
| 0-20 | low |
| 21-40 | medium |
| 41-60 | large |
| 61-80 | very large |
| 81-100 | extremely large |

Working capacity index

Method developed by the Finnish Institute of Occupational Health.

Checklist (questionnaire)

8 components

Working capacity index components and rating scale
(Ilmarinen J., Tuomi K. 2004)

| Components | Rating scale |
|---|--------------|
| 1. Ability to work at the current stage of work
(compared to the best) | 0-10 |
| 2. Dependence of working capability on the difficulty of the task (requirements at work) | 1-5 |
| 3. Self-assessment of health status | 1-7 |
| 4. Deterioration of working capacity due to illness | 1-6 |
| 5. Absence from work during the last 12 months | 1-5 |
| 6. Personal forecast of working capacity for the next 2 years | 1, 4 or 7 |
| 7. Number of diagnosed diseases | 1-7 |
| 8. Subjective assessment of working capacity mental resources | 1-4+ |
| DI = I - poor working capacity (7-27 points)
DI = II - average working capacity (28-36 points)
DI = III - good working capacity (37-43 points)
DI = IV - very good working capacity (44-49 points) | |

illegible

REBA

A quick assessment method of general body condition

The REBA tool was created and developed by Mac Atamney and Hignett.

Risks affecting the musculoskeletal system are assessed, working postures are analysed. Although this questionnaire was originally developed for those working in the health sector, it can also be used to analyse the working environment in other sectors, where:

- the whole body is used;
- the posture is static, dynamic, changes rapidly, or is unstable;
- often or rarely live or dead loads are lifted. (MSD prevention toolbox, 2007)

REBA

A questionnaire with different body postures has been developed, where either the employee or the observer marks the most appropriate one.

- **www.ergo-plus.com**

Form of musculoskeletal discomfort

It assesses pain, discomfort

- in nine different areas of the body
- during the last 12 months and
- the last 7 days, and also the fact of
- whether the pain has affected work in the last 12 months.

Rapid Upper Limb Assessment RULA

- <https://ergo-plus.com/rula-assessment-tool-guide/>

Thank you



Topic:

“SAFETY AND HEALTH IN THE WORKING PLACE” & “FIRESAFETY”

Author

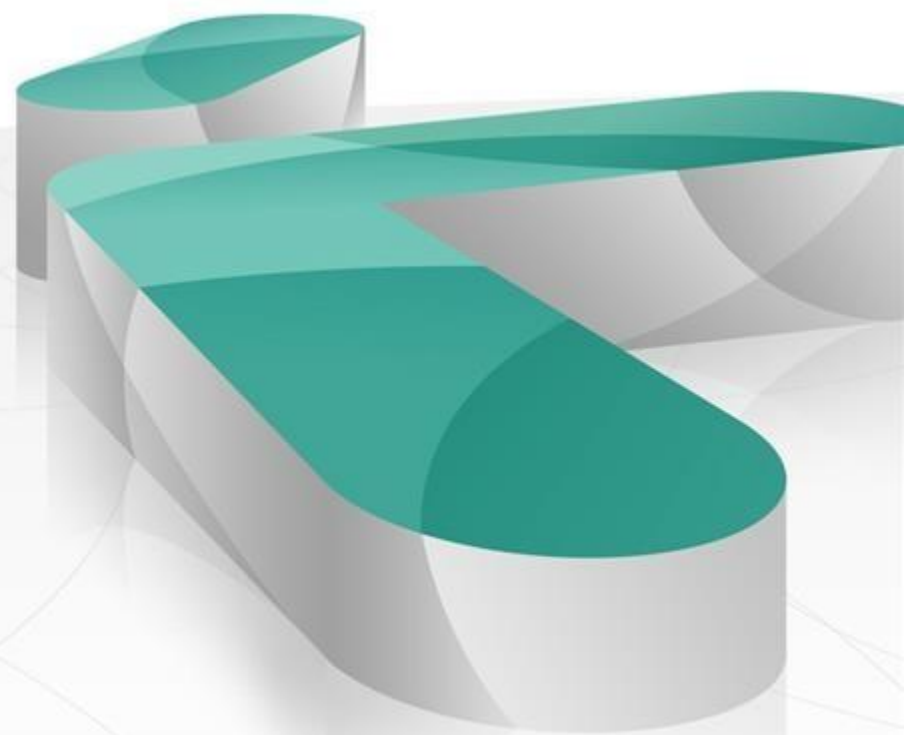
Giedrius Gecevicius

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Occupational safety and health

Doc. dr. G. Gecevičius

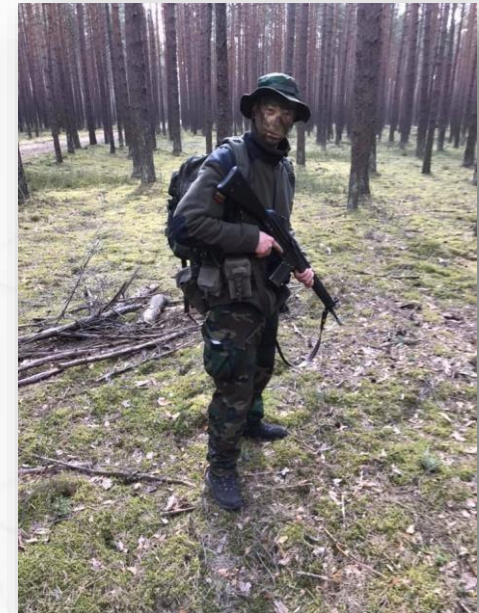
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- Work at KTU (Renewable energy)
- Jobs at LEI (Renewable Energy Sources)
- Traineeship in Denmark (Wind Energy)
- Traineeship in Bulgaria (Renewable Energy Technologies)
- Training in Greece (Wind Energy Technologies)
- Training in Austria (Energy efficiency)
- Training in Italy (Wind Energy Technologies)
- Traineeship in Finland (Renewable Energy Technologies)
- Traineeship in Israel (Wind Energy Technologies)

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Safety at work. Human safety. What is it?

Subject plan

- *Laws on safety of people at work*
- *Staff coaching and training*
- *Electrical protection measures and techniques*
- *Fire safety*
- *Occupational hygiene*
- *Safety in loading operations*
- *Accident investigation procedures*
- *Pressure vessel safety*
- *Warning signals and their action*
- *Protecting the environment*
- *Legal foundations of civil protection*
- *First aid*

Subject plan

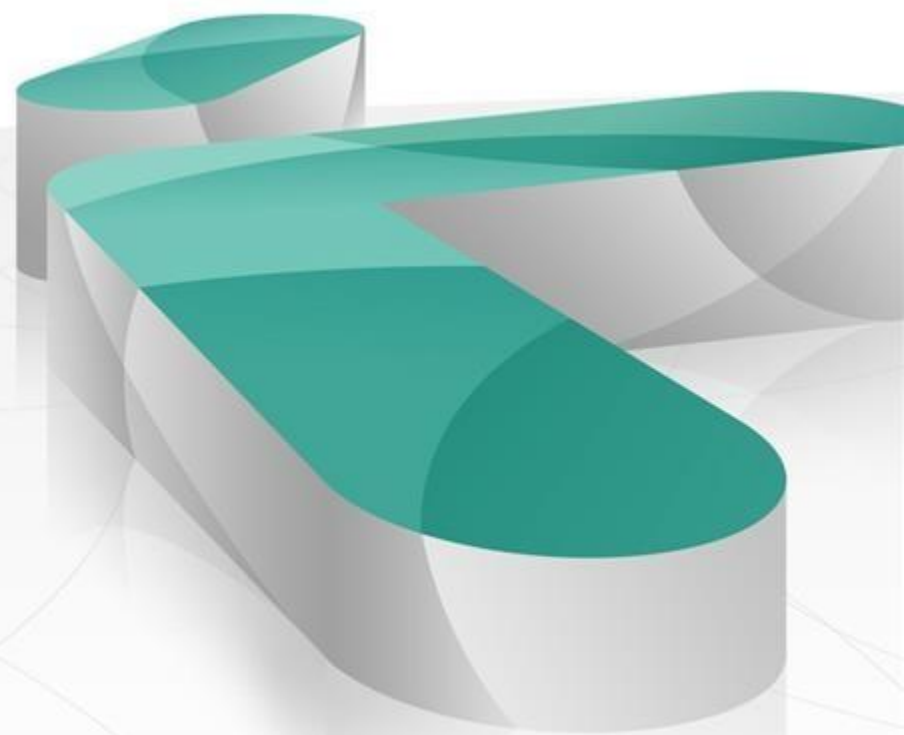
- **Practical work :**

- ▶ Investigation of an accident at work
- ▶ Fire safety investigation
- ▶ Emergency management plan
- ▶ Study of the occupational risk management system in enterprises.



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Description of safety and health legal framework



What are safe working conditions?



Risk
Safety



What are safe working conditions??



Facts

- In the EU, one person dies every three and a half minutes from work-related causes.
- In Lithuania, around 3,000 people have accidents at work every year, of whom around 200 are killed or seriously injured.

source: www.vdi.lt

Facts

- Men have more accidents than women; - If an accident occurs at night, it is more likely to be fatal; - Wounds and superficial injuries are the most common injuries; - Shift workers have more accidents.

Source: www.osha.europa.eu

The main reasons

- Poor organisation and execution of work;
- Violation of the instructions required by the health and safety legislation for workers;
- Lack of internal control;
- Fictitious instruction and training;
- Failure to use personal protective equipment;
- Failure of work equipment;
- Drunkenness;
- Negligence.

source: www.sdg.lt

What can we do to avoid accidents at work?

Occupational safety - a set of measures and rules to ensure safe working conditions in relation to the specific nature of the work.



What is legislation?



"**A legal act** is an official written document adopted by public authorities, officials or individuals in accordance with a specific procedure, which sets out the rules of law" - A. Vaišvila.

A legal act is an official document of legal significance; an act of legal significance; an act; a social act.

Concept of legislation

Statutory instrument (statutory instrument) - an official legal document (statutory instrument) adopted by a competent authority that establishes, modifies or repeals legal rules.

The individual act formulates a one-off, albeit temporally continuous, rule of conduct.

Legislation

EU legislation

- Directive
- Regulation
- Decision
- Guidance
- Kt.

Lithuanian legislation

- Constitution
- Law: constitutional law, work law/code
- Decree
- Decree
- Statutes, regulations, etc.

Legislation: (Local and EU regulations)

<http://www3.lrs.lt/dokpaieska>

<https://www.e-tar.lt/portal/lt/index>

<https://eur-lex.europa.eu/homepage.html>

The Labour Code comprises

- Parts (4 parts)
 - Sections
 - Sections
 - Articles
 - Items

1.The Labour Code of the Republic of Lithuania (hereinafter referred to as the Code) regulates individual employment relations that arise from the conclusion of an employment contract in accordance with the procedure set out in the Code.

2.The Code also regulates social relations, which are related to individual labour relations (relations before and after the conclusion of an employment contract, collective labour relations, relations arising in the course of disputes between the participants in labour relations, relations relating to the observance and supervision of the law, etc.).

Lithuanian work legislation – please
check your country legislation

3. In the cases provided for by this Code and other laws of the Republic of Lithuania, this Code shall regulate other *social relations governed by law and arising out of the exercise of a person's professional, official, creative or other activity.*

4. *The provisions of this Code shall be harmonised with the provisions of the legal acts of the European Union listed in the Annex to this Code..*

Definitions

An employee is a natural person who undertakes to perform a job function for remuneration under an employment contract with an employer. An employee may be a natural person with legal capacity (the capacity to have employment rights and obligations) and legal capacity (the capacity to acquire employment rights and create employment obligations by his or her own acts). A worker acquires legal capacity when he or she reaches the age of 16, subject to exceptions provided for by law.

Employees work and safety

Article 158. Organisation of safety and health at work

1. Every worker shall be provided with appropriate, safe and health-protective working conditions as laid down in the Law on Occupational Safety and Health of the Republic of Lithuania. This Law also lays down the rights and obligations of workers and employers, the institutional framework for ensuring occupational safety and health, and special provisions for the protection of particular groups of workers (pregnant workers, workers who have recently given birth or are breastfeeding, persons under the age of 18, and persons with disabilities).
2. The workplace and environment of each worker must be safe and healthy, equipped with in accordance with the requirements of occupational safety and health legislation.
3. The work shall be organised in accordance with the requirements of the occupational safety and health legislation.
4. Health and safety measures shall be financed by the employer.

Work safety (LT legislation)

Article 159. Workers' right to work safety

A worker shall have the right to refuse to work if his safety and health are endangered, and to perform work for which he has not been trained to work safely, if he is not provided with collective protective equipment, or if he is not provided with the necessary personal protective equipment.

A worker's reasonable refusal to work cannot be considered a breach of his/her employment duties.

Article 160. Compensation for damages

1. The delegation of an employer's duties or responsibilities to other persons shall not remove the employer's obligation to compensate for damage to the health of an employee resulting from the employee's maiming or other injury to his or her health, or in the event of his or her death, or from his or her contracting an occupational disease.

SAFETY AND HEALTH OF WORKERS IN THE REPUBLIC OF LITHUANIA THE LAW

The purpose of this Law is to establish:

legal provisions and requirements to protect workers from occupational risks or to reduce such risks;

the assessment of occupational risks, accidents at work and

general provisions on procedures for the investigation of occupational risks and diseases;

3) Occupational safety and health requirements for young workers, pregnant women, women who have recently given birth, women who are breastfeeding, and people with disabilities;

Lithuanian LAW ON OCCUPATIONAL SAFETY AND HEALTH

4)public administration of occupational safety and health and the competences of public authorities, the rights and obligations of employers, employers' representatives and workers in order to ensure safe and healthy working conditions, and the rights of workers' representatives in ensuring safe and healthy working conditions for workers;

5)the general principles of liability for breaches of the requirements of the regulatory framework for safety and health

Definitions

1. Accident - an unforeseen event resulting from a malfunction of work equipment, a breakdown of work or technological processes or other unforeseen circumstances, which has caused danger to people or the environment, and which has caused, or is likely to cause, damage to the health of workers and/or the environment.
2. Employer - as defined in Article 16 of the Labour Code of the Republic of Lithuania (hereinafter referred to as the "Labour Code"), as well as the State or
3. an institution or body of the state or municipality.
4. Employer's authorised person for occupational safety and health means the head of a department or other administrative official to whom a person,
5. representing the employer, has delegated the implementation of occupational safety and health requirements in the undertaking and/or a structural unit of the undertaking (hereinafter referred to as the 'employer's authorised person for occupational safety and health' - the head of the establishment or the person authorised by the employer).
6. The person representing the employer is the head of the undertaking, institution, organisation or other organisational structure (hereinafter referred to as the undertaking).
7. 'Working environment' means the space surrounding the workplace where risk factors harmful to the health of the worker (physical, physical, chemical, biological and other hazards).
8. 'Work equipment' means the machines, equipment, apparatus, appliances, tools, devices and other accessories used in the work process.
9. Working conditions' means the working environment, the nature of the work, working and rest periods and other circumstances which have a direct impact on the well-being, performance, safety and health of the worker.
10. Place of work' means the place where a person performs the work agreed in the contract of employment or carries out a public administration function.
11. 'Employee' means, as defined in Article 15 of the Labour Code, also a person who has acquired the statutory status of a civil servant a person who has the status of a statutory civil servant and who is employed by a State or municipal institution or body.
12. Employee representatives - as defined in Article 19 of the Labour Code.

Definitions

11. Workers' safety and health representative' means a worker elected at a collective meeting of the workers of the undertaking, with the following powers
12. to represent the safety and health interests of workers in the undertaking, unit or shift.
13. Occupational safety and health' means all preventive measures designed to preserve the working capacity, health and life of workers at work, which
14. are used or planned in all phases of the undertaking's activities, in order to protect workers from occupational risks or to reduce them as far as possible.
15. Regulatory legislation on occupational safety and health - regulatory legislation which establishes, modifies or invalidates legal norms (laws, resolutions of the Seimas, the Government, regulatory legislation on occupational safety and health approved by the Minister of Social Security and Labour or by this Minister together with other Minister(s), the Minister of Health, the Chief State Labour Inspector of the Republic of Lithuania (hereinafter referred to as the "Chief State Labour Inspector").
16. Incident - an occurrence related to work where no worker is injured or where the worker suffers an injury as a result of the occurrence, requires only first medical aid.
17. Disabled person - as defined in Article 2(8) of the Law on Social Integration of Disabled Persons.
18. Young person' means a person under the age of 18.
19. Harmful factor - a risk factor in the working environment which, when acting on the body of a worker, may cause illness or occupational disease and the effects of which may be life-threatening.
20. Breastfeeding woman means a mother who has provided her employer with a certificate from a health care institution stating that she is breastfeeding her child.
21. Child-friendly and safe work' means work that is safe and suited to the child's physical capabilities.
22. Accident at work' means an occurrence at work, including an accident during working hours, investigated in accordance with the established procedure and declared to be an accident at work, resulting in an injury (slight, serious, fatal) to the worker. An accident at work in which the worker died as a result of a non-work-related illness shall not be classified as an accident at work.

Definition

21. Accident on the way to or from work - an incident, including an accident during the employee's journey to or from work, that occurs during the employee's working days on the road between the workplace and:

the place of residence,

a place outside the territory of the undertaking where the employee may be during a rest and meal break;

a place outside the workplace where the worker is paid.

A woman who has recently given birth is a mother who has provided her employer with a certificate of delivery from a health care institution and who is raising her child until it reaches the age of one.

Pregnant woman: a worker who has provided her employer with a certificate from a health institution confirming her pregnancy.

Adolescent: a person aged between 16 and 18 years.

Hazardous factor' means a risk factor present in the working environment which may cause acute health problems or death.

Hazard: a potential threat to the health and life of workers.

Potentially hazardous installation' means a potentially hazardous work equipment which, when used at work, poses a risk to the health and safety of workers through

the risk to occupational safety and health arising from the energy stored and the processes involved is greater than that of other work equipment and is subject to compulsory maintenance.

'occupational disease' means an acute or chronic disorder in the health of a worker caused by one or more harmful and/or hazardous factors in the working environment occupational disease.

Occupational hazard (risk): the possibility of injury or other damage to the health of a worker as a result of exposure to harmful and/or dangerous factor(s) in the working environment.

Occupational health' means the health of workers, which is preserved and enhanced by the prevention of harmful factors in the working environment that cause ill health, the adaptation of the working environment to the physiological and psychological capabilities of workers, the maintenance of workers' health, and the implementation of health promotion measures.

Child' means a person under 16 years of age.

Occupational safety and health' means all preventive measures designed to preserve the efficiency, health and life at work of workers, which are applied or planned at all stages of an undertaking's activities, in order to protect workers from, or to reduce as far as possible, occupational risks.

- **Health and safety guarantees for workers**
- **Safety and health training**
- **Rights of workers' representatives**
- **Duty of the employer**
- **Organisation of preventive measures for occupational safety and health in undertakings**
- **Internal control of occupational safety and health in the undertaking**
- **Employer's responsibilities for providing safe and healthy working conditions**
- **Instructing and training workers**



LAW ON SOCIAL INSURANCE FOR ACCIDENTS AT WORK AND OCCUPATIONAL DISEASES

This Law establishes the social insurance of accidents at work, on the way to or from work and occupational diseases (hereinafter referred to as "social insurance of accidents at work"), the categories of persons insured under this type of social insurance, and the rights of these persons to the benefits of this insurance, and the conditions under which benefits may be granted, calculated, and paid.

LAW ON SOCIAL INSURANCE FOR ACCIDENTS AT

WORK AND OCCUPATIONAL DISEASES

3. Incapacity for work - loss of capacity to work as a result of an accident at work, on the way to or from work, or as a result of an occupational disease.

The loss of working capacity is expressed as a percentage. If the victim dies as a result of an accident at work, on the way to or from work, or as a result of an acute occupational disease, the loss of work capacity shall be deemed to be 100 per cent. The loss of working capacity as a result of an accident at work, on the way to or from work, or as a result of an occupational disease, shall be determined by the Invalidity and Disability Determination Service under the Ministry of Social Security and Labour (hereinafter referred to as the "NDNT") in accordance with the procedure established by the Government or the body authorised by it.

- Insured events
 - Non-insurable events
 - Rights of insured persons
 - Obligations of insured persons
-
- Social insurance against accidents at work
 - benefits
 - Sickness allowance
 - Sickness benefit rates
 - Conditions under which sickness benefit is not paid
 - Lump-sum compensation for incapacity for work
 - Recovery of funds from persons at fault



POTENTIALLY HAZARDOUS INSTALLATIONS IN THE LRELAND LAW ON THE SUPERVISION OF HAZARDOUS INSTALLATIONS

Purpose and application of the Law

This Law lays down the rules for the use of potentially hazardous equipment of the following groups

referred to in Article 3 of this Law, the general principles of supervision and control of its performance in order to ensure the safe operation of the equipment and the protection of human life, health and the environment from the possible harmful effects of the equipment. This Law shall also apply to the maintenance of equipment installed and used in railway or motor vehicles. For containers of hazardous substances transported by rail, this Act applies only to the inspection of their technical condition.

This Law shall not apply to installations the maintenance of which is prescribed by the Laws on Nuclear Energy, on Radiation Protection, on Radioactive Waste Management, on installations used exclusively for defence purposes.

1. Article. Maintenance of installations and application of regulatory acts on maintenance of installations

The following groups of installations must be checked for their technical condition:

- 1. steam and water heating boilers;**
- 2. pressure vessels;**
- 3. hazardous goods pressure pipelines, pressurised steam and hot water pipelines**
- 4. pipelines;**
- 5. pressureless containers for hazardous substances;**
- 6. lifts;**
- 7. power-driven lifts for lifting persons and goods;**
- 8. ropeways;**
- 9. escalators and escalator walkways;**
- 10. lifting equipment;**
- 11. power-driven amusement equipment;**
- 12. industrial installations using combustible gases.**

Definitions

Potentially hazardous installations (hereinafter referred to as "installations") - means means of work (machines, equipment, devices, apparatus, appliances or tools used for work) and other installations, the use of which poses a risk to the life, health, environment or property of workers and other persons due to the energy stored in them and the processes taking place, and which require the supervision provided for in this Law. Equipment includes its control, signalling, interlocking and safety devices and control measuring instruments.

'Use of installations' means activities relating to the starting or stopping, operation, transport, repair, modification, maintenance and servicing of installations, including cleaning.

'owner of the installation' means the legal or natural person who owns the installation or the operator of the installation who owns, uses and disposes of the installation in trust.

POTENTIALLY HAZARDOUS INSTALLATIONS IN THE LRELAND LAW ON THE SUPERVISION OF HAZARDOUS INSTALLATIONS

Article 4. State regulation of the maintenance of installations

1. The Government shall:

1. approve the list of categories of installations referred to in Article 3(1) of this Law;

2. establish a State Register of Potentially Hazardous Installations and approve its regulations;

3. designate the State authorities responsible for the organisation of the supervision of individual categories of installations;

4. determine the authorisation to accredited bodies to inspect the technical condition of installations

the procedure for authorising inspection bodies to inspect technical installations;

POTENTIALLY HAZARDOUS INSTALLATIONS IN THE IRELAND LAW ON THE SUPERVISION OF HAZARDOUS INSTALLATIONS

- Organising the maintenance of installations
- Empowering accredited inspection bodies
- Delegation of powers to accredited inspection bodies
- State labour inspectorates funkcijos įrenginių
- supervision
- Tasks of authorised bodies
- Functions and rights of authorised bodies



Lithuanian Work Inspection (Please check your country work inspection)

Article 1. Purpose of the Law

This Law establishes the rules of the State Law of the Republic of Lithuania Labour Inspectorate of the Republic of Lithuania (hereinafter referred to as the State Labour Inspectorate)

challenges, the functions, structure, the State Labour Inspectorates rights, duties, responsibilities, procedures for inspections.

Lithuanian LABOUR INSPECTORATE LEGISLATION

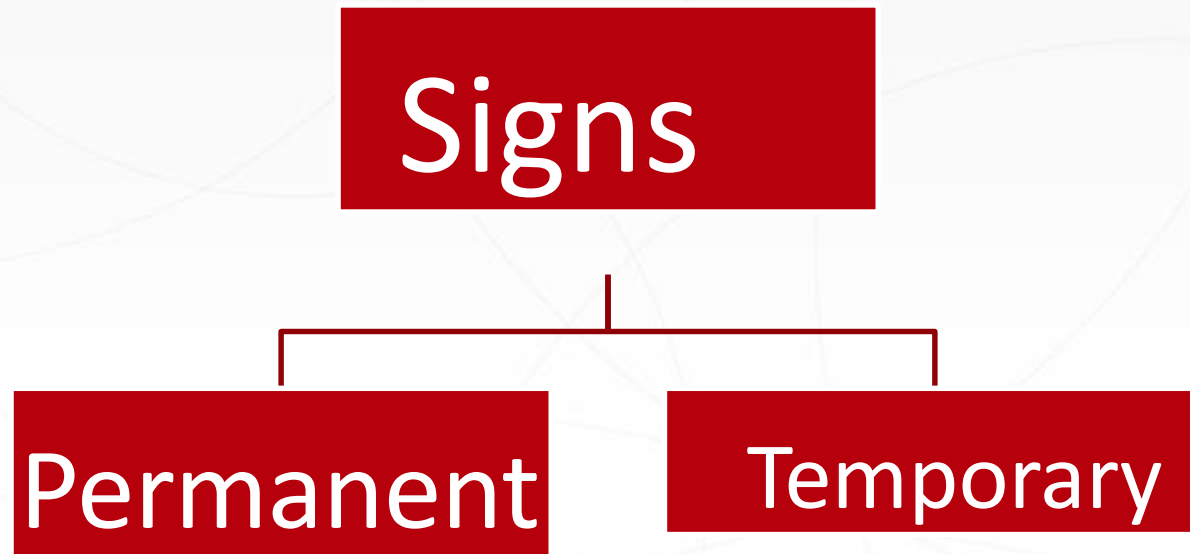
Article 2. Legal status of the State Labour Inspectorate

1. The State Labour Inspectorate shall be a state control body with legal personality, operating under the Ministry of Social Security and Labour.
2. The State Labour Inspectorate shall be a budgetary institution, financed from the State budget of the Republic of Lithuania, shall have its own bank accounts, a seal with the coat of arms of the State of Lithuania and its name.

Safe working environment



Signs in the working environment



Signs in the working environment

- **Prohibited (red)**
- **Warning (yellow)**
- **Mandatory (blue)**
- **Informative (green)**
- **Fire signs**

Prohibited signs



Warning signs



Mandatory signs



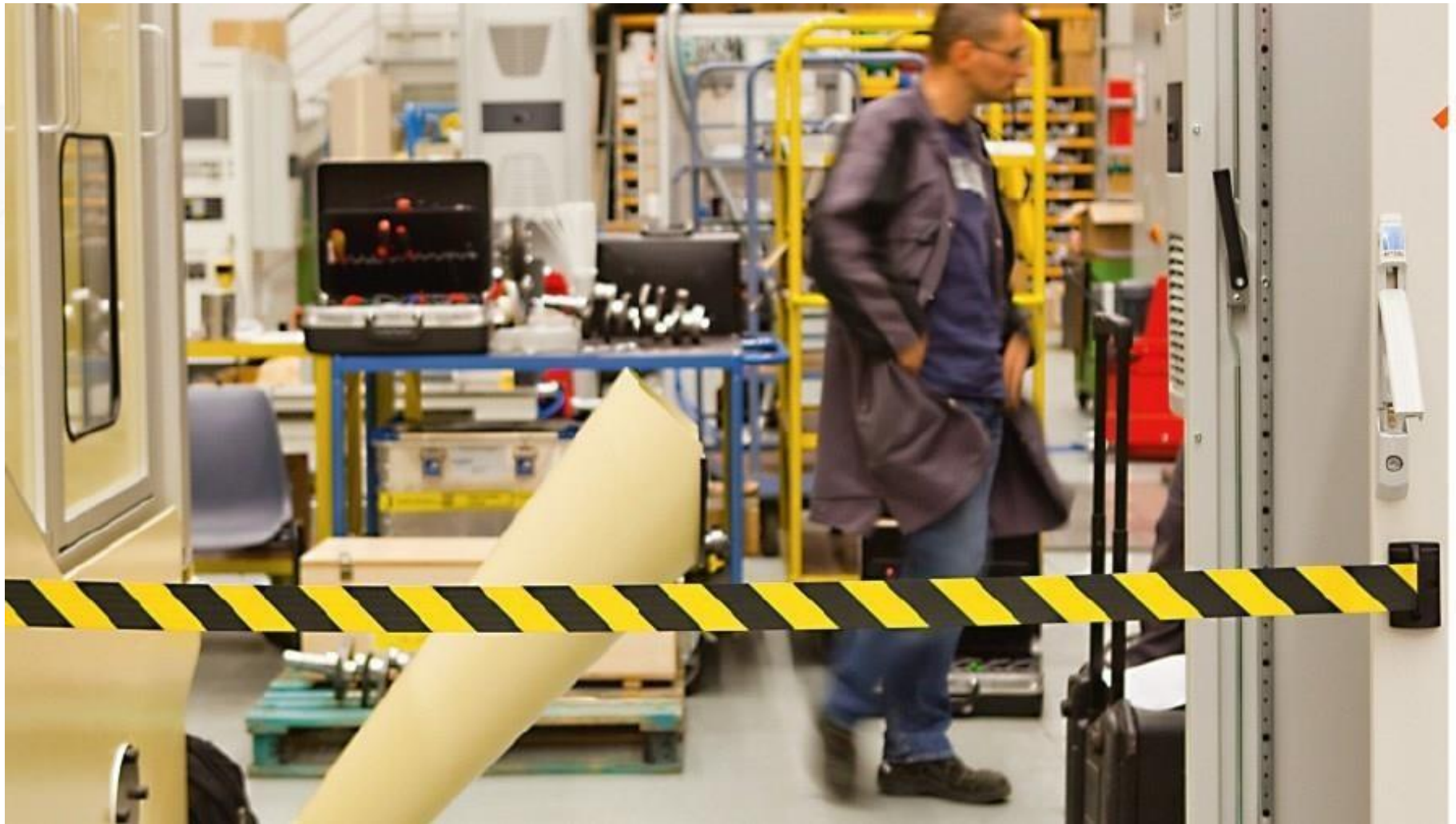
Information signs



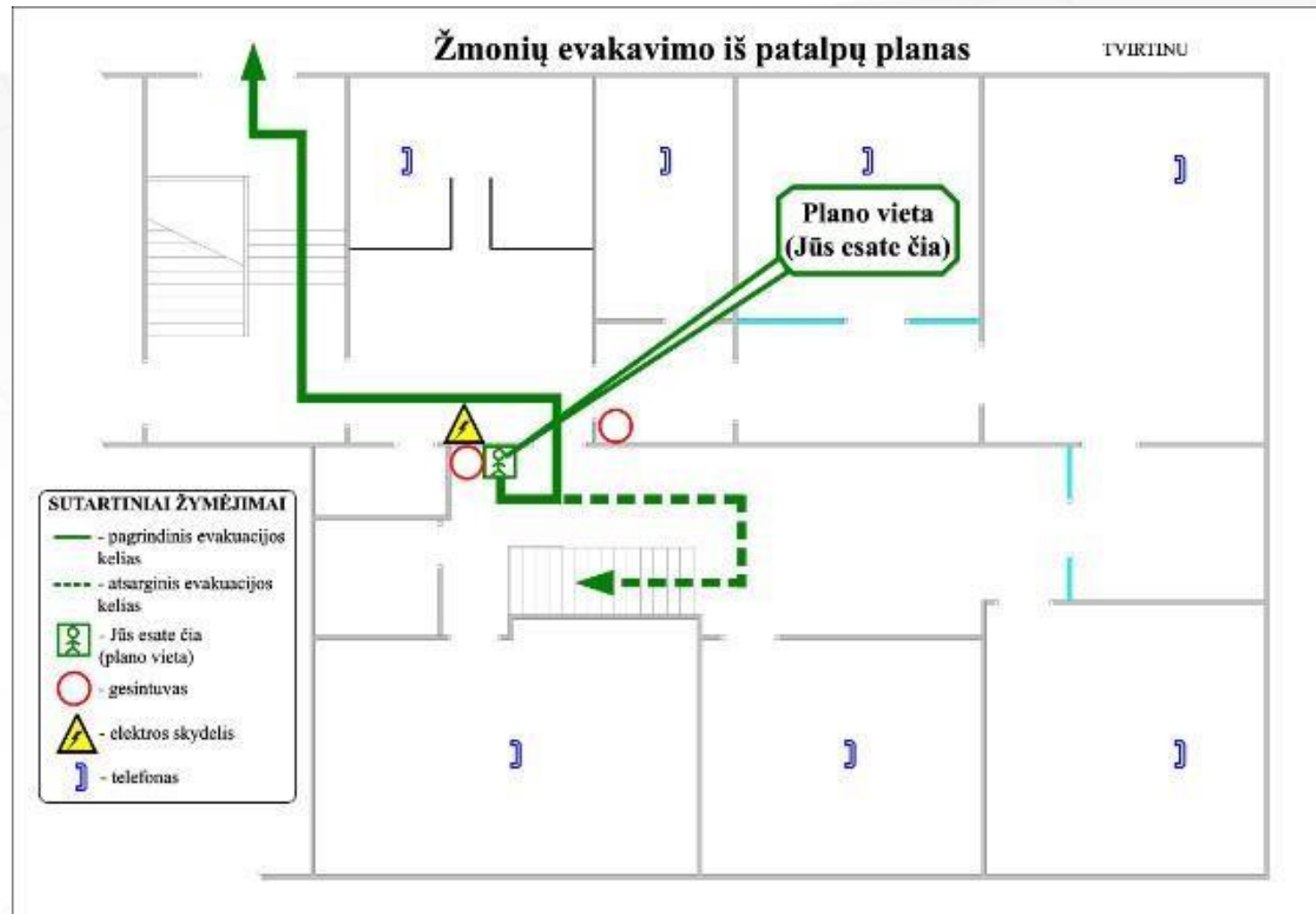
Signs for fire appliances



Safety lane



Evacuation plan



Requirements for the installation of workplaces

- Workplace - on the premises of the institution and/or any premises of the institution where staff may work.



Requirements for workplaces

- Evacuation and markings
- Electrical installation
- Washbasins and toilets
- Rest area
- First aid facilities

Workplace requirements

- Changing rooms ≥ 0.35 m² per
- per employee
- Lockable lockers
- Distance between rows of lockers $\geq 1,4$ m
- Rest area $\geq 0,9$ m² per employee
- The catering room shall be equipped with: table, chairs, food warmer, refrigerator, washbasin.
- Toilets:
 - 1 toilet for 18 men or 12 women;
 - ▶ 1 urinal for 18 men;
 - ▶ 1 hand wash basin shall be allocated to 48 men or 48 women.

Dining room



Dressing room



Open gates and transparent doors



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Labour risks

Objectives

- Protect the health and safety of workers.
- Investigate existing or potential occupational risks at work and provide preventive measures.
- Protect workers from occupational risks or reduce them to an acceptable level.
- To improve the prevention of accidents at work and
- prevention of occupational accidents and diseases.

Šaltinis: www.sdg.lt

Labour risks

Risk assessment is the process of identifying hazards and risk factors, their potential severity and likelihood of causing harm to health, determining the magnitude of the risk in the light of the protective measures to be applied, and deciding on the acceptability of the risk, i.e. whether or not the risk is acceptable, tolerable, or unacceptable and the application of preventive measures.

Šaltinis: www.sdg.lt

Labour risks

- Hazard - a potential threat to the health and life of workers;
- Risk is the encounter between the worker and the hazard;
- Occupational risk: the possibility of danger to health or life (injury or other damage to the health of the worker) due to exposure to a harmful and/or dangerous factor or factors in the working environment



Šaltinis: www.sdg.lt

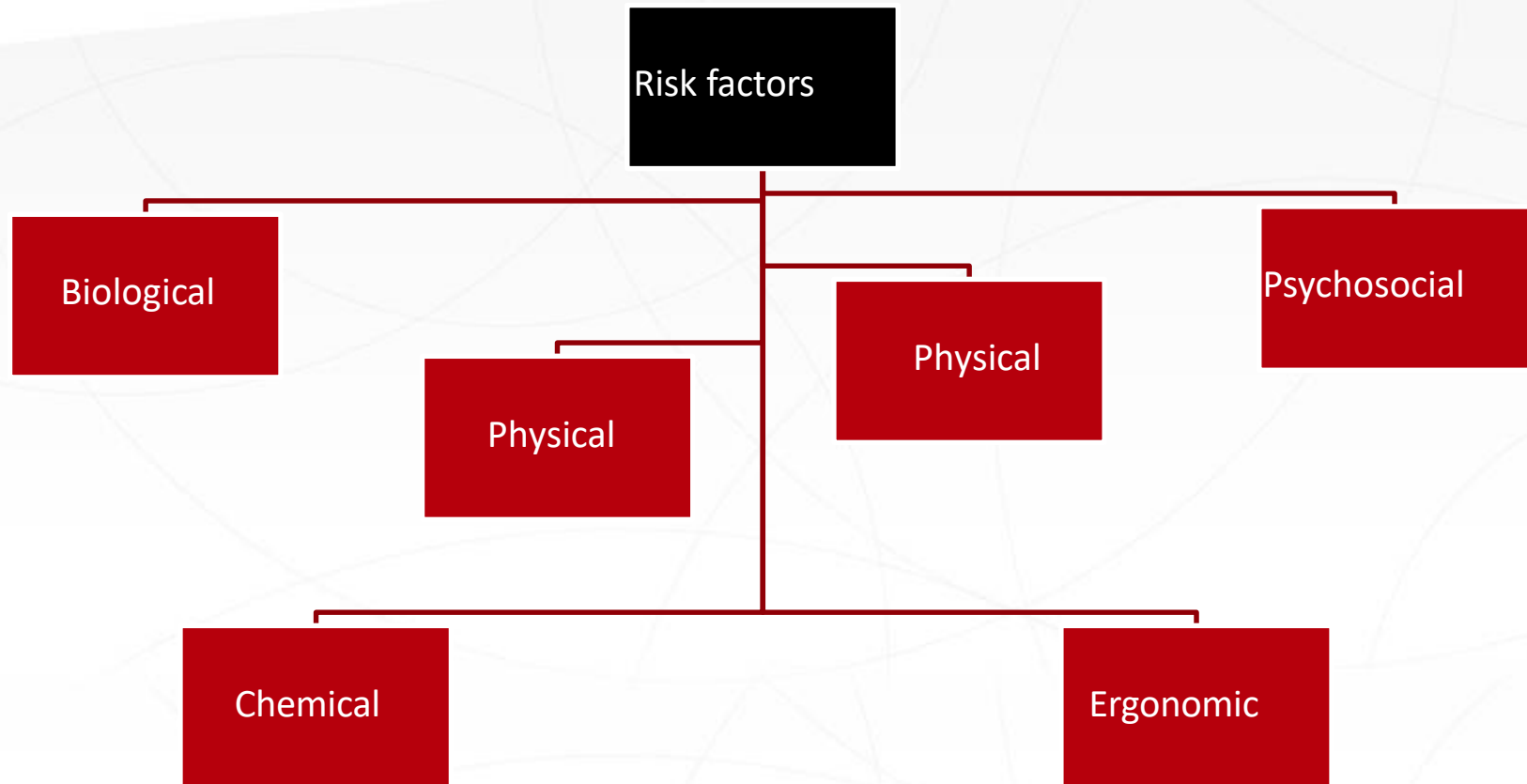
The risk assessment is performed in stages

- Preparatory work (risk factors and hazards identification);
- Risk factor analysis;
- Determination of the magnitude of the risk;
- Decision on risk acceptability;
- Elimination or reduction of risks;
- Risk monitoring.

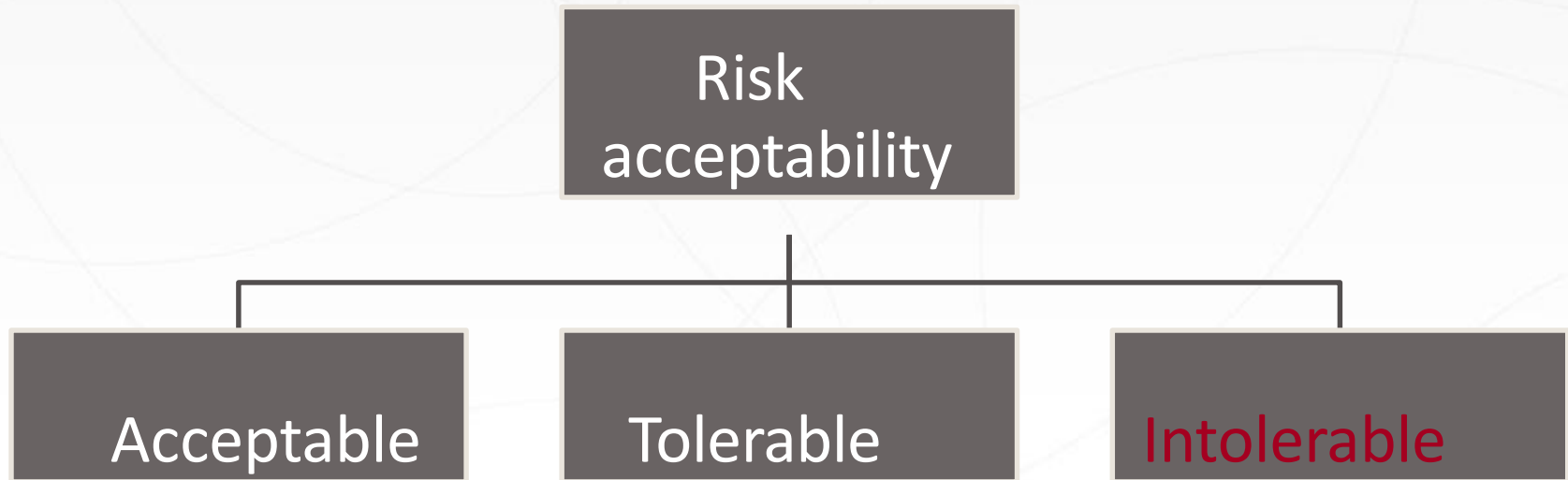


*Which workplaces must have
risk assessment?*

Risk factors



Risk acceptability



Probability of work risks

- Unlikely
- Likely
- Very likely



Risk mitigation plan

1. Definition of criteria;
2. Finding solutions:

*Technical (equipment, technology, state of the art)
etc.);*

1. *Organisational (management, financial issues);*
2. *Human (qualifications, status, competence, training).*

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Personal protective equipment

Staff protection measures

**Collective redress
measures**



**Personal protection
measures**

CE

AAP classification



- Head protection (helmets, hard hats, caps, etc.)
- Respiratory protection (masks, half-masks, respirators, etc.)
- Hearing protection (headphones, earplugs)
- Face, eye protection (goggles, visors, etc.)
- Hand protection (various gloves, handcuffs, etc.)
- Foot protection (boots, boots, sandals, etc.)
- Body protection (work clothes)

AAP



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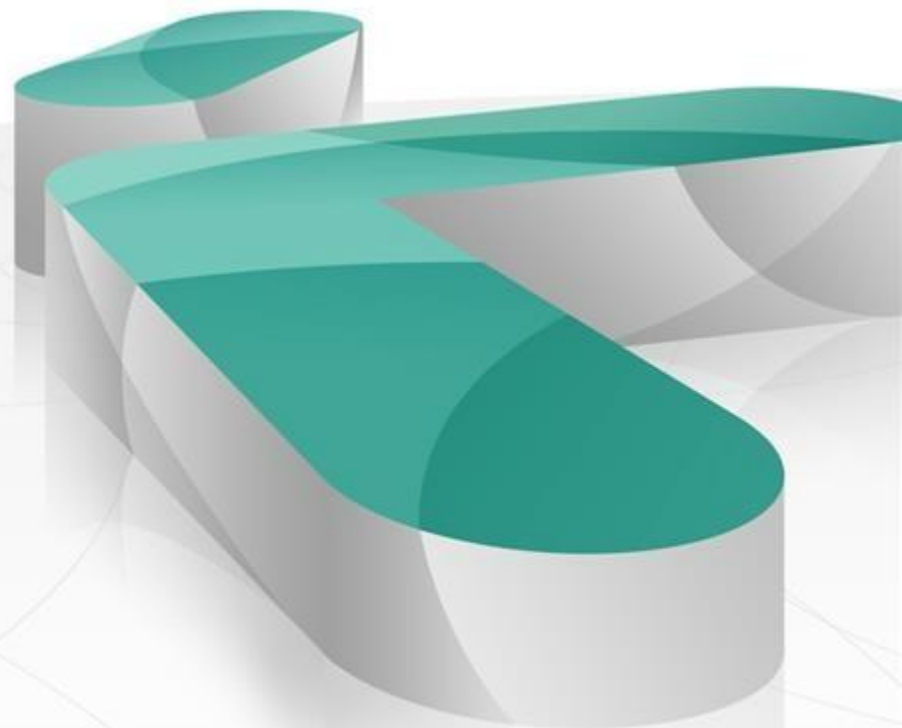
Questions? Comments?

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Fire Safety

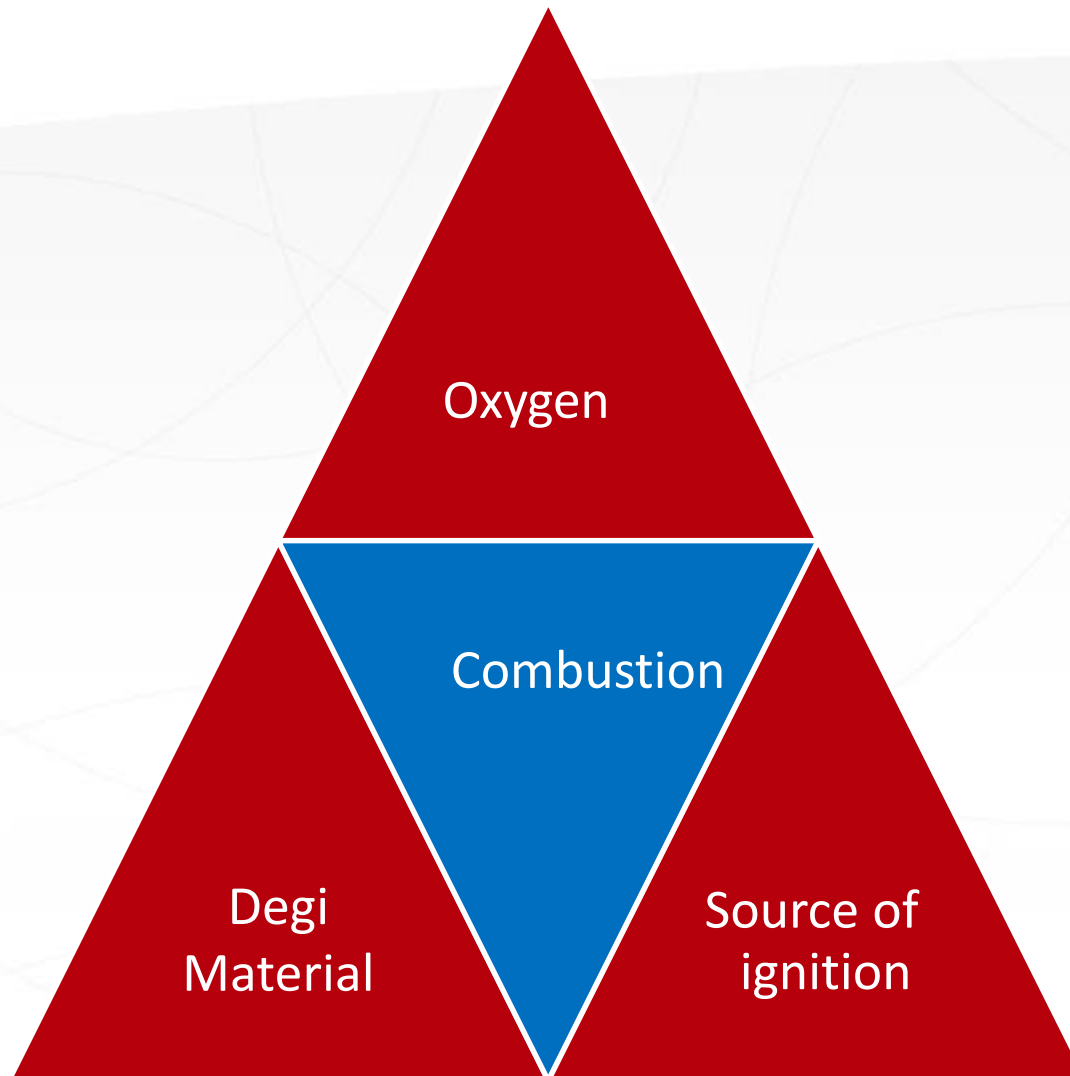


Burning

Combustion reaction, or exothermic reaction of flammable materials features separation. combustion processes - oxidation of which. there is heat and often external light



Conditions required for combustion



Fire



Definitions

- **Fire** - uncontrolled combustion occurring in a place other than a designated area, posing a danger to people, property or the environment.
 - **Fire safety** - activities that
 - Available at prevention and control of fires extinguishing fires, rescuing people and property during a fire
- The object** is immovable and movable property subject to fire safety requirements.

Key legislation

- **FIRE SAFETY LAW**
- **GENERAL FIRE SAFETY REGULATIONS (BPST)**

LAW ON FIRE SAFETY

This Law establishes the legal basis for ensuring and organising fire safety in the Republic of Lithuania, the system of ensuring fire safety, the functions of state and municipal institutions and bodies, and the recruitment of employees of the municipal fire services and the State Fire and Rescue Service, fire-fighting and rescue of people and property (hereinafter referred to as "municipal fire-fighting services and State Fire Rescue Service employees"), their duties and dismissal, and the development of the qualifications of municipal fire-fighting services and State Fire Rescue Service employees, the status and activities of volunteer firefighters, and the rights and obligations of citizens, enterprises, institutions and organisations in the field of fire safety.

The main chapters and articles of the law

Ensuring fire prevention

Basic requirements for fire prevention

ORGANISATION OF FIRE FIGHTING

The fire-fighting force shall consist of:

- the State Fire Rescue Service
- Municipal fire services
- Ministry fire brigades
- Voluntary fire-fighting organisations.

<http://pagd.lrv.lt/>

BPST

These Fire Safety Rules (hereinafter referred to as Rules) lay down the general fire safety requirements for the operation of premises, irrespective of their form of ownership, which must be complied with by all persons within the territory of the Republic of Lithuania.

MAINTENANCE OF THE SITE

- General requirements
- Territories of apartment blocks, garages, garden communities
- Vehicle parking areas
- Service station sites
- Peatland areas

BUILDINGS AND PREMISES

- Residential buildings and premises
- Buildings and premises for industrial, manufacturing and storage purposes

TECHNOLOGICAL PROCESSES AND INSTALLATIONS

- Electrical installations
- Heating
- Fire works
- Civil pyrotechnics

STORAGE OF MATERIALS

FIRE-FIGHTING MEASURES AND FIRE-FIGHTING EQUIPMENT

ACTIONS BY CIVIL SERVANTS AND EMPLOYEES IN THE EVENT OF A FIRE

An establishment, institution or organisation employing or regularly housing more than 100 persons shall have a fire action plan for civil servants and employees (hereinafter referred to as "the plan"). The Plan shall be approved by the head of the undertaking, establishment or organisation.

The Plan shall provide for:

1. Assistance to firefighters in taking the shortest route to the fire, the use of firefighting equipment and the use of firefighting equipment
the shortest route to the fire-fighting point, water source, etc.
2. Shutting down electrical power (except for fire protection systems), shutting down transport equipment and units, closing various communications, shutting down ventilation systems in the burning and adjacent areas and other actions to stop the spread of the fire.
3. Automatic fire-fighting systems (smoke extraction, public address)

Inspection.

4. Protecting people extinguishing the fire from possible collapses, poisoning, etc.
5. Evacuation of people from the fire area, protection and evacuation of material goods.

The use of firefighting equipment, if any, by the fire brigades, volunteer firefighting formations (if any)
Procedures, use of extinguishing equipment and techniques.

6. Personnel working in the undertaking, institution, organisation under different conditions (working and
(e.g. in different conditions of work and rest days, winter, etc.).

Fire classes

Fire class notation:

Class A - fires involving solid (usually organic) materials, where combustion occurs when hot embers are produced;

Class B - fires involving liquid or liquefiable solids;

Class C - gas fires;

Class D - metal fires.



Types of extinguishers

- **Water foam extinguisher.** The main extinguishing material is foam. Foam is a mixture of air, water and foam. It is suitable for extinguishing fires of Class A (burning of solids produces hot coals) and Class B (burning of flammable liquids or materials which liquefy on combustion), but is not suitable for extinguishing gases and electrical appliances. Must be stored in heated areas.
- **Carbon dioxide extinguisher.** The main extinguishing agent is carbon dioxide. Extinguishes Class B and C (flammable gas) fires and is suitable for extinguishing electrical installations. Lowly effective for Class A and D (flammable metal fires).
- **Powder extinguisher.** This is a multi-purpose fire extinguishing agent suitable for extinguishing Class A, B, C, D fires (depending on the type of powder). It can also be used to extinguish electrical installations.

Fire extinguishers



| Fire
Class | Extinguishing materials | | | | | |
|---------------|-------------------------|------|-----|-------------|---------|--------|
| | watter | foam | gas | powder | | |
| | | | | ABC
tipe | BC tipe | D tipe |
| A | + | + | - | ++ | - | - |
| B | - | ++ | + | ++ | ++ | - |
| C | - | - | + | ++ | ++ | - |
| D | - | - | - | - | - | ++ |

Storage rules for fire extinguishers

- They shall be suspended not more than 1,5 m from the floor to the bottom of the extinguisher and in such a way that the door of the room, when open, does not obstruct their retrieval;
- Not closer than 1 m to heating appliances;
- Placed in or near fire tap cabinets, in fire panels or on the floor, stored in special cabinets, boxes or stands;
- Stored in such a way that the lettering is visible.
- Fire extinguishers located outdoors or in an unheated room and not intended for use at low temperatures shall be moved to heated rooms during frost.
- Fire extinguishers shall display the fire safety sign 'Extinguisher' and clearly
- clearly indicate the location of their storage.
- The misuse of primary fire-fighting equipment and appliances is prohibited.
- Fire-fighting machinery (fire engines, motor pumps) and fire-fighting equipment and primary fire-fighting equipment on the premises shall be maintained and kept in working order.

Signs for fire appliances



Binding signs



Extinguishing and protective measures

Non-flammable fabric



Hydrants



Smoke detectors



- Nuo 2018-05-01 privalomi visuose butuose, individualiuose namuose, sodo nameliuose.

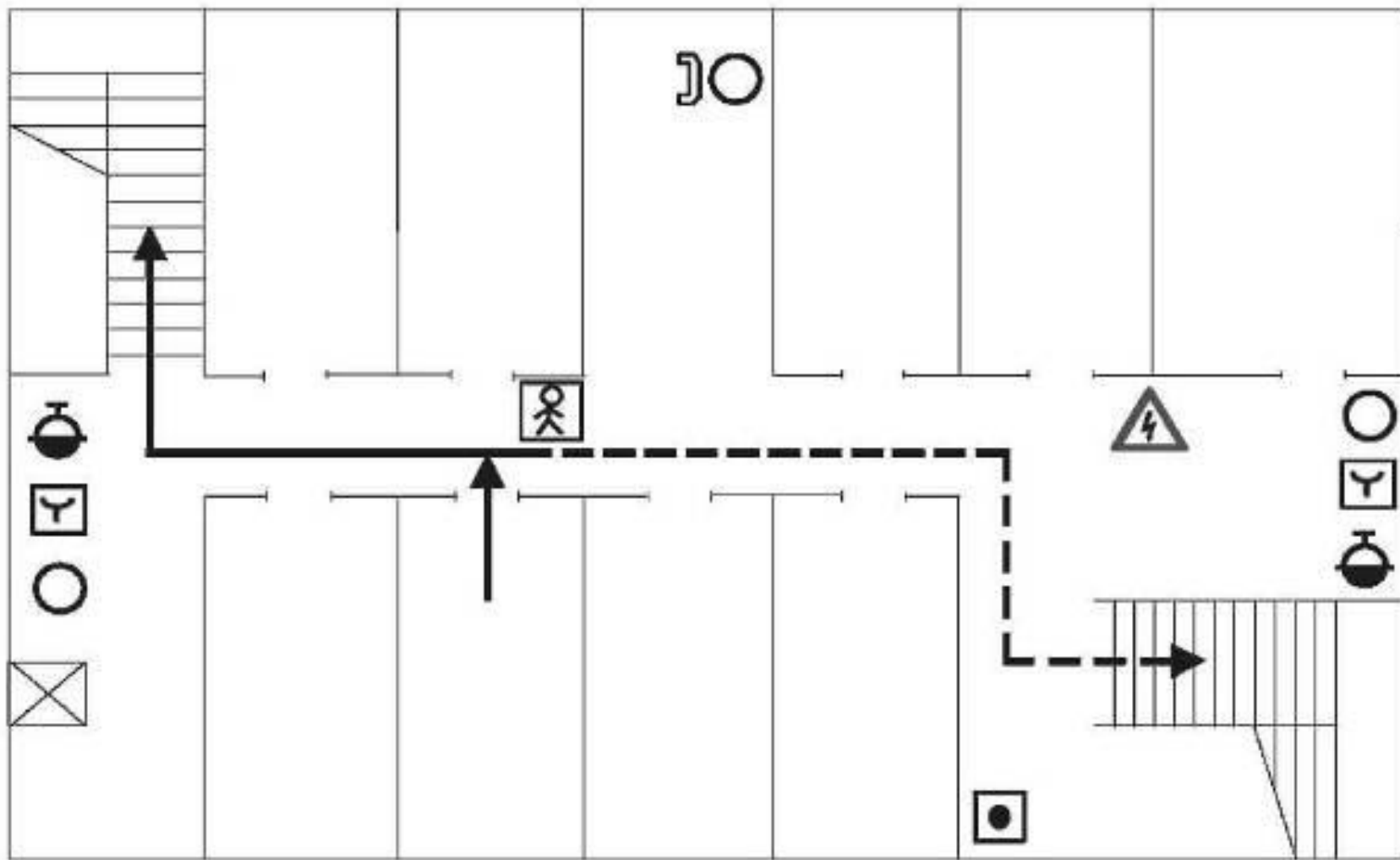
Fire reservoir















<https://www.youtube.com/watch?v=bSrTThq4>
QAs

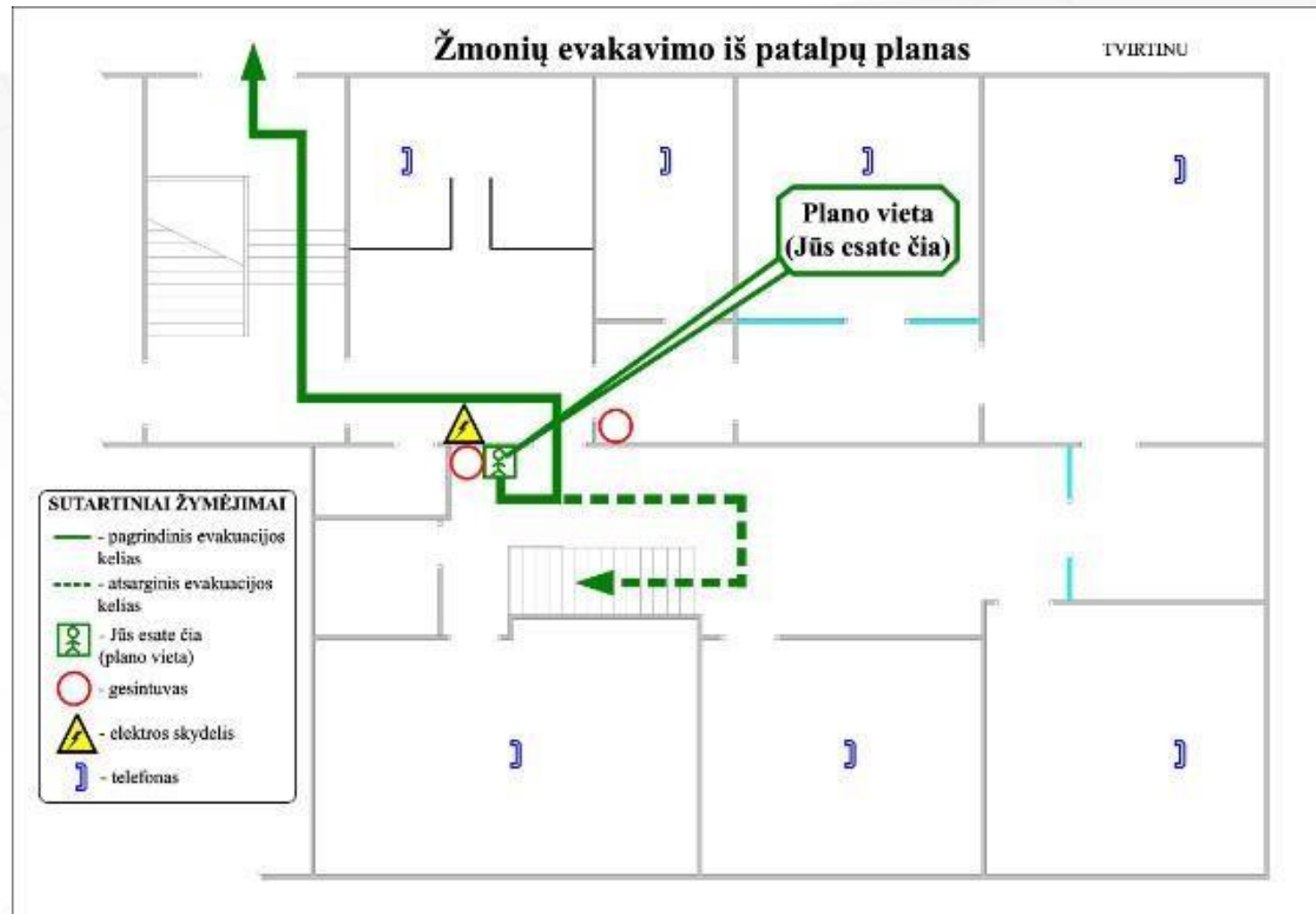
Evacuation plan



Markings on the evacuation plan

| sign | Meaning | Frame collar | Background collar |
|---|---|--------------|-------------------|
|  | fire extinguisher | red | white |
|  | fire hydrant | red | white./red |
|  | manual start switch for smoke extraction device | red | white |
|  | electrical panel | black | yelow |
|  | phone | blue | |
|  | fire alarm switch | red | white |
|  | fire pump (electrified damper) switch | red | white |
|  | main escape route | green | |
|  | Adittional escape route | green | |
|  | You are here | green | white |

Evacuation plan





Where?

Who?

When?

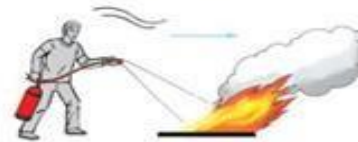
extinguish the fire downwind

when extinguishing a smooth surface,
start from the nearest side

extinguish the burning wall from the
bottom up

if there are several fire extinguishers, use
them at the same time

Teisingai



Neteisingai



Ugnį gesinkite pavėjui.



**Gesindami lygų paviršių, pradėkite nuo arčiausiai
esančios pusės.**



Degančią sieną gesinkite nuo apačios į viršų.



Jeigu yra keli gesintuvai, naudokite juos vienu metu.

Memo

Please observe fire safety rules:

do not plug in electric heating appliances, kettles, irons, water heaters, turn off the TV, radio, air conditioning, lights when leaving the room. Please note that it is dangerous to cover floor lamps and table lamps with flammable materials. Do not smoke in bed or leave cigarettes unlit. It is dangerous. Do not take an unlit cigarette into a lift carriage. Do not throw cigarettes or cigarette butts into paper boxes, use ashtrays for this purpose. Do not bring or store materials that could cause a fire in your room. Familiarise yourself with the evacuation plan. Try to memorise the exit points and the layout of stairways.

In the event of a fire in your room:

report it immediately to the general emergency number 112. If you cannot put out the fire on your own, leave the room and close the door, do not lock it. Be sure to report the fire to the corridor supervisor or another member of the administration. Move away from the danger area and act in accordance with the instructions of the management or the fire brigade.

In the event of a fire outside your room:

report it immediately to the general emergency number 112. Leave your room when you have closed the windows and doors. If corridors and stairwells are smoke-filled and it is not possible to leave the premises, stay in your room and open the windows wide. A tightly closed door can provide long-lasting protection against dangerous temperatures. To avoid smoke poisoning, cover cracks and ventilation ducts with towels or bed linen moistened with water, and try to report your location to the management by telephone. When the firefighters arrive at the scene, go to the window and shout for help. It is not advisable to use the lift to evacuate, but you can take shelter on a balcony or loggia. Make sure you close the door tightly when you go out on the balcony.

First aid

FirstAid⁺

a b c



Main parts

Pharmacy



Turnstile



Defibrillator



What to do in case of a disaster???

1. Call for help!
2. Make sure it's safe!
3. Route a, b, c!



Where?

Who?

When?

What to do?

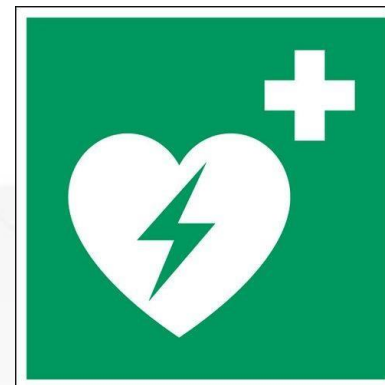
- Your own safety is paramount!
- A - Airway
- B - Breathing
- C - Circulation
- https://www.youtube.com/watch?v=Uo_Z-rH9qsg

Pharmacy



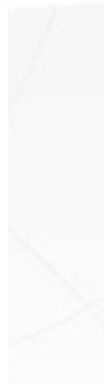
<https://www.youtube.com/watch?v=HT9gD00-p8c>

Defibrillator



<https://www.youtube.com/watch?v=RBxclVuSmHc>

Turnstile



<https://www.youtube.com/watch?v=tOm8IJLRWF0>

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Questions? Comments?

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Thank you for your attention!

Giedrius.Gecevicius@go.kauko.lt

Topic:

“FINAL TEST”

Name 01.10.2020

1. In which language does ergon mean "work"?
2. What and how are postural strains at work measured?
3. What do the letters SGR stand for?
4. Which occupations are likely to have high psycho-emotional risks?
5. The ergonomic risks for the director of a large institution could be.....
6. (Latvia) Cabinet of Ministers Regulation No 660 "Procedure for internal monitoring of the working environment" states that the risks of the working environment shall be assessed at least per year.
7. What do you understand by "anthropometric measurements"?
8. What do you understand by 'risks'?
9. How does fatigue manifest itself and how can it be measured?
10. Create one question in the ergonomic risk assessment questionnaire?
11. Name 3 ergonomics experts known in Latvia!
12. Historically, ergonomics issues have also been addressed by
13. Name 2 ergonomic risk factors in your work environment!
14. Name a book on ergonomics published in Latvia and its author.....
15. If you were an ergonomics researcher, which area would you find most exciting?

Name 01.10.2020

1. What and how are postural strains measured at work?
2. How does mental overload manifest itself?
3. What do the letters SGR stand for?
4. Ergonomic risks to the driver could be.....
5. If you were an ergonomics researcher, which area would you find most exciting?
6. (Latvia) Cabinet Regulation No 660 "Procedure for internal monitoring of the working environment" states that the risks in the working environment shall be assessed at least per year.
7. What do you understand by "physiological measurements"?
8. How does fatigue manifest itself and how can it be measured?
9. Name a book on ergonomics published in Latvia and its author.....
10. Create one question in the ergonomic risk assessment questionnaire?
11. Name 3 ergonomics experts known in Latvia!
12. What methods can be used to assess psycho-emotional risks?
13. Historically, ergonomics issues have also been addressed by
14. Name 2 ergonomic risk factors in your work environment!

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Name 01.10.2020

1. What happens if there is too much psycho-emotional stress?
2. Name 2 ergonomic risk factors in your work environment!
3. What and how is biomechanical workload measured?
4. Ergonomic risks for a road worker could be.....
5. (Latvia) Cabinet Regulation No 660 "Procedure for internal monitoring of the working environment" states that the risks in the working environment shall be assessed at least per year.
6. What do the letters SGR stand for?
7. Name a book on ergonomics published in Latvia and its author.....
8. If you were an ergonomics researcher, which field would you find most exciting?
9. How does mental overload manifest itself?
10. What do you mean by "risks"?
11. Make one question in the ergonomic risk assessment questionnaire?
12. Name 3 well-known ergonomics experts in Latvia!
13. How does fatigue manifest itself and how can it be measured?

Name 01.10.2020

1. How does physical overload at work manifest itself?
2. (Latvia) Cabinet Regulation No 660 "Procedure for internal monitoring of the working environment" states that the risks in the working environment shall be assessed at least per year.
3. Which types of work can be assessed for ergonomic risks using the SGR method?
4. What happens if there is too much psycho-emotional stress?
- 5 Name 2 ergonomic risk factors in your work environment!
6. What and how are biomechanical workloads measured?
7. Name a book on ergonomics published in Latvia and its author.....
8. The ergonomic risks of a cantorial worker could be.....
9. If you were an ergonomics researcher, which area would you find most exciting?
10. What do you mean by "physiological measurements"?
11. Make up one question in an ergonomic risk assessment questionnaire?
12. Name 3 well-known ergonomic specialists in Latvia!

Name 01.10.2020

1. Which types of work can be assessed for ergonomic risks using the SGR method?
2. What and how is physiological workload measured?
3. Which occupations should have a very high attention span?
4. In which language does ergon mean "work"?
5. What methods can be used to assess psycho-emotional risks?
6. Name 2 ergonomic risk factors in your work environment!
7. The ergonomic risks for a healthcare worker could be.....
8. If you were an ergonomics researcher, which area would you find most exciting?
9. What do you understand by "anthropometric measurements"?
10. (Latvia) Cabinet Regulation No 660 "Procedure for internal monitoring of the working environment" states that the risks in the working environment shall be assessed at least per year.
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