Regulation No. 44 of the Government of the Republic of 1 April 2016

Health and safety requirements regarding working environments affected by electromagnetic fields, exposure limit values and action levels of electromagnetic fields and measurement procedure of electromagnetic fields

Chapter I General Provisions

Section 1. Scope and field of application

(1) This Regulation shall prescribe the obligations of the employer for avoiding or reducing health risks related to electromagnetic fields in the working environment in the case of direct biophysical effects and indirect effects, peak values and action levels of electromagnetic fields in the case of short-term direct exposure and determining the level of exposure to electromagnetic fields by measurement or assessment.

(2) This Regulation shall not cover the possible effects of long-term exposure to electromagnetic fields or risks arising from exposure to live conductors.

(3) This Regulation shall not be applied to the Defence Forces.

Section 2. Definitions

(1) Electromagnetic fields – static electric, static magnetic and time-varying electric, magnetic and electromagnetic fields with frequencies up to 300 GHz. Physical quantities regarding exposure to electromagnetic fields are indicated in Annex I.

(2) Direct biophysical effects – effects in the human body directly caused by its presence in an electromagnetic field, including:
1) thermal effects, such as tissue heating through energy absorption from electromagnetic fields in the tissue;
2) non-thermal effects, such as the stimulation of muscles, nerves or sensory organs;
3) limb currents.

(3) Indirect effects – effects caused by the presence of an object in an electromagnetic field, which may become the cause of a safety or health hazard, such as:
1) interference with medical electronic equipment and devices, including cardiac pacemakers
and other implants or medical devices worn on the body;
2) the projectile risk from ferromagnetic objects in static magnetic fields;
3) the initiation of electro-explosive devices (detonators);
4) fires and explosions resulting from the ignition of flammable materials by sparks caused by induced fields, contact currents or spark discharges;
5) contact currents.

(4) Exposure limit values (ELVs) – values established on the basis of biophysical and biological considerations, in particular on the basis of scientifically well-established short-term and acute direct effects, i.e. thermal effects and electrical stimulation of tissues. The following terminology for exposure limit values shall be used in this Regulation:
1) health effects ELVs – those ELVs above which workers might be subject to adverse health effects, such as thermal heating or stimulation of nerve and muscle tissue;
2) sensory effects ELVs – those ELVs above which workers might be subject to transient disturbed sensory perceptions and minor changes in brain functions.

(5) Action levels (ALs) – operational levels established for the purpose of simplifying the process of demonstrating the compliance with relevant ELVs or, where appropriate, to take relevant protection or prevention measures specified in this Regulation. The following terminology for action levels shall be used in the Regulation:
1) low ALs and high ALs for electric fields – levels which relate to the specific protection or prevention measures specified in this Regulation;
2) low ALs for magnetic fields – levels which relate to the sensory effects ELVs;
3) high ALs for magnetic fields – levels which relate to the health effects ELVs.

(6) Health effects ELVs, sensory effects ELVs and ALs of workers are set out in Annexes II and III.

(7) Workers at particular risk – workers who wear implanted medical devices (e.g. cardiac pacemakers) or workers with medical devices worn on the body (e.g. insulin pumps), pregnant and under-age workers. A worker shall notify the employer if they are a worker at particular risk.

Section 3. Exposure limit values and action levels of electromagnetic fields in a working environment

(1) In the case of non-thermal effects, the exposure of workers to electromagnetic fields shall be limited to health effects EVLs and sensory effects ELVs pursuant to Annex II. In the case of thermal effects, the exposure of workers to electromagnetic fields shall be limited to the exposure limit values prescribed in Annex III.

(2) The adherence to exposure limit values shall be verifiable and traceable based on the risk assessment carried out pursuant to section 5 and the action plan devised on the basis of it.

(3) Where it is demonstrated that the relevant ALs set out in Annex II and III are not exceeded, the employer shall be deemed to be in compliance with the health effects ELVs and sensory effects ELVs.
Section 4. Derogations to applying exposure limit values in the working environment

(1) The workers’ exposure to electric fields may exceed low ALs (Annex II, Table B1) where justified by the practice or process, provided that either the sensory effects ELVs (Annex II, Table A3) are not exceeded, or:
   1) health effects ELVs (Annex II, Table A2) are not exceeded;
   2) the excessive spark discharges and contact currents (Annex II, Table B3) are prevented by specific protection measures; and
   3) information on the situations referred to in clause 9 (2) 1) has been given to workers.

(2) If a work cannot be carried out in any other way, the workers’ exposure to electromagnetic fields may exceed low ALs (Annex II, Table B2), including in the head and torso, provided that either the sensory effects ELVs (Annex II, Table A3) are not exceeded, or:
   1) the sensory effects ELVs are exceeded only temporarily;
   2) the health effects ELVs (Annex II, Table A2) are not exceeded;
   3) action is taken, in accordance with subsection 7 (6), where there are transient symptoms under clause 7 (6) 1); and
   4) information on the situations referred to in clause 9 (2) 1) has been given to workers.

(3) The workers’ exposure to electromagnetic fields may exceed the sensory effects ELVs (Annex II, Table A1) during the shift, where justified by the practice or process, provided that:
   1) the sensory effects ELVs are exceeded only temporarily;
   2) the health effects ELVs (Annex II, Table A1) are not exceeded;
   3) specific protection measures, such as controlling movements, have been taken;
   4) action is taken, in accordance with subsection 7 (6), where there are transient symptoms under clause 7 (6) 2); and
   5) information on the situations referred to in clause 9 (2) 1) has been given to workers.

(4) The workers’ exposure to electromagnetic fields may exceed the sensory effects ELVs (Annex II, Table A3 and Annex III, Table A2) during the shift, where justified by the practice or process, provided that:
   1) the sensory effects ELVs are exceeded only temporarily;
   2) the health effects ELVs (Annex II, Table A2 and Annex III, Tables A1 and A3) are not exceeded;
   3) action is taken, in accordance with subsection 7 (6), where there are transient symptoms under clause 7 (6) 1); and
   4) information on the situations referred to in clause 9 (2) 1) has been given to workers.

(5) The workers’ exposure to electromagnetic fields may exceed the exposure limit values if the exposure is related to the installation, testing, use, development, maintenance of or research related to magnetic resonance imaging (MRI) equipment for patients by a health care provider, provided that all the following conditions are met:
   1) the risk assessment carried out in accordance with section 5 has demonstrated that the ELVs are exceeded and the circumstances duly justify exceeding the ELVs;
   2) the characteristics of the workplace, work equipment, or work practices have been taken into
account;
3) given the state of the art, all technical and/or organisational measures have been applied at the workplace;
4) directions given in the equipment’s user manual are adhered to when operating the equipment to ensure the safe use and maintenance of the equipment;
5) the employer demonstrates that workers are still protected against adverse health effects and against safety risks.

Chapter II Obligations of Employers

Section 5. Assessment of health risks related to electromagnetic fields

(1) In the course of the risk assessment of the working environment, the employer shall determine the sources of electromagnetic fields and assess the health and safety risks related to the workers’ exposure to electromagnetic fields.

(2) The level of exposure to electromagnetic fields shall be assessed pursuant to section 11, taking into account the emission levels and other appropriate safety-related data of the equipment used. The data obtained from the measurement or calculations shall be preserved along with the risk assessment in a suitable traceable form to permit consultation if necessary.

(3) When carrying out the risk assessment, the employer shall give particular attention to the following:
   1) the health effects ELVs, the sensory effects ELVs and the ALs;
   2) the frequency, the level, duration and type of exposure, including the distribution over the worker’s body and over the volume of the workplace;
   3) any direct biophysical effects;
   4) any effects on the health and safety of workers at particular risk
   5) any indirect effects;
   6) the existence of replacement equipment designed to reduce the level of exposure to electromagnetic fields;
   7) appropriate information obtained from the health surveillance;
   8) multiple sources of exposure;
   9) simultaneous exposure to multiple frequency fields
   10) other relevant health and safety related information.

(4) If the risk assessment carried out pursuant to subsection 1 reveals that there are no health risks to workers associated with electromagnetic fields, the assessment provided in subsections 2 and 3 is not necessary.

Section 6. Publishing the outcomes of the risk assessment and measurements

(1) An employer or state supervisory authority that holds the results of the measurement or calculations of the electromagnetic fields or the results of the assessment of the workers’ health risks resulting from exposure to electromagnetic fields obtained in the course of the working
environment risk assessment shall disclose these on demand in the public interest within 30 days as of the date when a claim was submitted in accordance with the Personal Data Protection Act.

(2) An employer or state supervisory authority may refuse the public disclosure mentioned in subsection 1 if it damages the employer’s business interests, including interests related to intellectual property, unless such public disclosure serves overriding public interest.

Section 7. Reducing a worker’s health risk in the case of exceeding action levels of electromagnetic fields

(1) An employer shall apply measures in order to reduce electromagnetic fields at source to the possible minimum value pursuant to the principles of preventive action provided in Section 121 of the Occupational Health and Safety Act, taking into account state of the art technical means.

(2) If the assessment carried out pursuant to subsection 5 (2) reveals that the level of exposure to electromagnetic fields in the working area exceeds the low application levels of non-thermal effects or application levels of thermal effects, the employer shall prepare and apply an action plan of technical and operational measures in order to prevent the workers’ exposure to those electromagnetic fields, the strength level of which exceeds health effects ELVs or sensory effects ELVs.

(3) When preparing the action plan, the employer shall, above all, pay attention to the following precautions:
   1) limitations of the duration and strength of the exposure to electromagnetic fields;
   2) the use of alternative work methods that avoid or reduce exposure to electromagnetic fields;
   3) the use of replacement equipment that allow reducing exposure to electromagnetic fields, taking into account the work performed;
   4) the use of technical measures to reduce the effect of electromagnetic fields, where necessary, the use of interlocks, shielding or similar health protection mechanisms;
   5) the use of appropriate delimitation and access measures, such as signals, labels, floor markings, barriers, to limit or control access;
   6) reducing the safety risks arising from spark discharges and contact currents through technical means and through the training of workers;
   7) appropriate maintenance for work equipment, workplaces and workstation systems;
   8) the design and layout of workplaces and workstations;
   9) the availability of adequate personal protection equipment if the level of exposure to electromagnetic fields cannot be reduced by collective technical protective equipment.

(4) The action plan shall include precautions for the protection of workers at particular risk.

(5) Pursuant to 30 November 1999 regulation No. 75 of the Minister of Social Affairs, Requirements for the Use of Safety Signs in the Workplace, the employer shall mark with danger warning signs any work equipment, premises and danger areas, where the workers may be exposed to electromagnetic fields, the strength of which exceeds exposure-application levels, and limit access to the danger areas, if it is technically feasible and justified due to the risk of exposure.
(6) If applying subsections 4 (1)–(4) at the workplace causes the occurrence of transient symptoms for a worker, the employer shall review the outcomes of the risk assessment and, if necessary, update the prevention methods or change the organization of work. These transient symptoms may include:
1) sensory perceptions and effects in the functioning of the central nervous system;
2) static magnetic field effects, such as vertigo and nausea.

Section 8. The employer’s action if the ELVs of electromagnetic fields are exceeded

(1) The workers’ exposure to electromagnetic fields may not exceed health effects ELVs or sensory effects ELVs, unless on the conditions prescribed in section 4.

(2) If, despite the measures taken by the employer, the workers are exposed to electromagnetic fields that exceed the health effects ELVs, the employer shall immediately reinforce the protection and prevention measures.

(3) The employer shall identify and record the reasons why the ELVs have been exceeded, and shall amend the protection and prevention measures accordingly to prevent them being exceeded again. The amended protection and prevention measures shall be preserved along with the risk assessment in a suitable traceable form to permit consultation if necessary.

Section 9. Worker information and training

(1) The employer shall ensure that workers who are likely to be exposed to risks from electromagnetic fields receive any necessary information and training.

(2) The instruction and training of a worker shall be carried out prior to commencing work and rely on the outcomes of the health risk assessment related to their position. Above all, the instruction and training shall include the following topics:
1) the adverse health effects caused by electromagnetic fields, including the possibility of transient symptoms and sensations related to effects in the central or peripheral nervous system;
2) the possible indirect effects of exposure to electromagnetic fields;
3) the adverse effects caused by electromagnetic fields to the health and safety of workers at particular risk;
4) early detection of physical harm caused by exposure to electromagnetic fields and the company procedure for reporting it;
5) procedure for carrying out health surveillance of workers;
6) information about the exposure limit values of electromagnetic fields and application limits and the strength levels of electromagnetic fields that occur in the workplace;
7) measures taken in the company to prevent or reduce health risks arising from electromagnetic fields, including measures taken to protect workers at particular risk;
8) safe organization of work and correct working practices in using and maintaining the work equipment to minimise risks resulting from exposure.
Section 10. Staff health surveillance

(1) An employer shall ensure that all workers who may be exposed to electromagnetic fields mentioned in subsection 2 of this section shall undergo health surveillance pursuant to the procedure prescribed in clause 13 (1) 7) of the Occupational Health and Safety Act.

(2) When sending a worker to health surveillance, the employer shall present the person carrying out the health surveillance with a list of those workers who are exposed to such electromagnetic fields, the strength of which is higher than one percent of low action levels of non-thermal effects (Annex II, Table B1 and B2) or ten percent of low action levels of thermal effects (Annex III, Table B1) or one percent of exposure limit values of magnetic fields in the frequency range from 0 to 1 Hz (Annex II, Table A1), and the data of the characteristics of electromagnetic fields of equipment that emit electromagnetic fields, which shall include frequency, strength, duration of exposure and other relevant information.

(3) The employer shall organize an emergency health surveillance for a worker if the worker gives notice of an unwanted or unexpected health effect or if the worker has been exposed to electromagnetic fields that exceed the exposure limit values.

(4) If the health surveillance reveals that the worker has been physically harmed due to exposure to electromagnetic fields, the worker shall be transferred to another job or position where there is no risk of exposure to electromagnetic fields, thereby considering the recommendations of the occupational health doctor.

Section 11. Assessment of exposure to electromagnetic fields

(1) An employer shall assess the level of exposure of workers to electromagnetic fields by means of measuring or calculation, if adherence to the exposure limit values cannot be ascertained in a reliable way based on available information, e.g. the equipment’s user manual.

(2) At least once in three years, the employer shall measure or calculate the strength level of those electromagnetic fields that the workers are exposed to at the workplace or when performing their duties. If changes have been made to the equipment’s structure, shielding or manner of use in a way which may influence the strength of the electromagnetic fields, an additional assessment of the strength level of the electromagnetic fields shall be carried out.

(3) An employer shall order the measuring mentioned in subsection 1 from a competent measurer or base their measuring and calculations on the following requirements:
   1) the person carrying out the measuring and calculations has undergone the necessary training;
   2) the method of measuring or calculation of electromagnetic fields shall follow the relevant standards or international research-based instructions;
   3) the measuring equipment shall be relevant and calibrated;
   4) the measuring and calculations shall be recorded, presented along with measurement uncertainty and include any and all information that is relevant for assessing the level of exposure of a worker to electromagnetic fields and the health risk resulting from that.
(4) Measuring the level of exposure to electromagnetic fields pursuant to subsection 1 is not necessary in the case of workplaces open to the public if:

1) measuring electromagnetic fields was carried out pursuant to the 21 February 2002 regulation No. 38 of the Minister of Social Affairs, *Exposure Limit Values of Non-Ionizing Radiation in Living and Recreation Areas, Residential and Public Buildings and Study Rooms, and Measuring the Levels of Non-Ionizing Radiation*, the limits that are prescribed in the regulation are adhered to in the case of workers and any risks to the workers’ health and safety have been precluded;

2) equipment that emits electromagnetic fields is being used that corresponds to the product safety requirements of the European Union, the safety levels of which are more strict than the levels prescribed by this regulation and no other equipment is being used.

**Chapter III Implementing Provisions**

**Section 12. Repeal of Regulation**


**Section 13. Entry into Force of the Regulation**

The regulation shall enter into force on 1 July 2016.

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Taavi Rõivas
Prime Minister

Jevgeni Ossinovski
Minister of Health and Labour

Aivar Rahno
Head of the Government Secretariat of the Government Office in the capacity of the State Secretary

**Annex I** Physical quantities regarding the exposure to electromagnetic fields

**Annex II** Non-thermal effects. Exposure limit values and action levels in the frequency range of 0 Hz to 10 MHz
Annex III  Thermal effects. Exposure limit values and action levels in the frequency range of 100 kHz to 300 GHz