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Occupational Health and Safety Requirements for the Working Environment Affected by Biological Risk Factors¹

Regulation No. 144 of 5 May 2000 of the Government of the Republic

The Regulation is established on the basis of subsection 3 of section 8 of the Occupational Health and Safety Act (RIIGI TEATAJA I 1999, 60, 616).

Chapter 1 GENERAL PROVISIONS

§ 1. Scope of application

(1) This Regulation provides the occupational health and safety requirements to protect the employee against any biological risk factors that may affect the working environment.

(2) The Regulation shall be applied to all such works where the employee, when performing such works, is or may be affected by biological risk factors.

§ 2. Categorisation of biological risk factors into risk groups

Biological risk factors shall be categorised into four risk groups according to their infectiousness:

- 1) *1st risk group* – as it is known, humans do not catch illness because of the risk factors;
- 2) *2nd risk group* – the risk factors may cause humans to catch illness and therefore constitute a threat to the health of the employee, although they do not create risk of infection to the population; there are effective tools available for their prevention and treatment;
- 3) *3rd risk group* – the risk factors may cause humans to catch heavy illness and therefore constitute a serious threat to the health of the employee; they may create risk of infection to the population, although there are effective tools available for their prevention and treatment;
- 4) *4th risk group* – the risk factors cause humans to catch heavy illness and therefore constitute a serious threat to the health of the employee and may create risk of infection to the population; there are usually no effective tools available for their prevention and treatment.

§ 3. Estimation of health risks to the employee

(1) In case of any works associated with risk of being exposed to biological risk factors, the employer shall define during the course of risk analysis of the working environment the kind, scope and duration of the risk of infection of the employee, and estimate accordingly the risk to the health of the employee and apply any necessary preventive measures.

(2) If there are simultaneously biological risk factors that belong into several risk groups, their cumulative effect should be taken account of at estimation of their health risk.

(3) Health risks to the employee shall be estimated on the regularly basis. Additional estimations shall be performed if any changes take place in the working environment that may affect the health of the employee.

(4) At estimation of health risks to the employee, the following shall be taken account of:

- 1) potential effect of the biological risk factors present in the working environment according to their risk group;
- 2) recommendation of the labour inspector or the occupational health physician to take preventive measures against the biological risk factor, if he or she finds that the health of the employee is under threat caused by this factor because of the type of work performed by the employee;
- 3) information about any diseases, potential signs of allergy or toxication that may become evident with the employee in case of the given work;
- 4) information about any illness related to work that may have been detected at medical examination.

§ 4. Applying preventive measures

(1) If it is clarified as a result of risk analysis of the working environment that only factors of the 1st risk group affect or may affect the working environment and there is no considerable threat to the health of the employee, there is no need to apply any measures provided by sections 5–16.

(2) Measures specified in sections 5, 7–13 shall be applied if the employee is not directly exposed to 5, biological risk factors when performing his or her work responsibilities but may be according to the results of the risk analysis under threat caused by these factors because of his or her work conditions or type of work. Such works include the following:

- 1) working at a plant where food or raw materials for food are processed;
- 2) working at a plant producing agricultural products, and forestry;
- 3) works where the employee is exposed to animals, animal products or any products made of animal products;
- 4) working at a medical institution, including isolation rooms and mortuary; nursing home;
- 5) working at a clinical, veterinary or diagnostic laboratory, except for diagnostic microbiological laboratories;
- 6) working at a waste handling facility;
- 7) working at waste water cleaning facility.

Chapter 2 EMPLOYER'S OBLIGATIONS

§ 5. Primary obligation of the employer

The employer shall avoid using any biological risk factor causing threat to human health if it is possible to replace it with a harmless or more harmless biological factor according to contemporary knowledge.

§ 6. Reducing health risk

(1) If the results of risk analysis show that the working environment is affected by biological risk factors, the employer shall avoid putting the health of the employee under risk caused by these biological risk factors.

(2) If the threat cannot be eliminated by measures specified in section 5, the health risk to the employee shall be reduced to the lowest level possible by applying the following measures:

- 1) marking the regions in the working environment that are affected by biological risk factors, and mounting the warning sign "Biological threat" to the relevant spots;
- 2) reducing the number of employees within the region of effect of risk factors to lowest level possible;
- 3) conducting the work processes and processing infectious materials in such a way that would avoid biological risk factors soaking into working environment or keep their presence in the working environment at the lowest possible level;
- 4) gathering together any infectious waste and keeping them in special labelled containers until their replacement from the working environment;
- 5) making infectious waste harmless to health and environment by means of autoclaving, disinfection or any other method;
- 6) observing the requirements of labour hygiene;
- 7) vaccinating the employees exposed to biological risk factors for which there is an effective vaccine;
- 8) defining an action plan for the case of emergency related to biological risk factors;
- 9) measuring content of biological risk factors within the air of the working environment if it is necessary and technically feasible.

(3) The employer shall consult the labour health physician whether it is necessary and appropriate to vaccinate the employees. Any expenses related to vaccination of the employees shall be covered by the employer. Certificate of vaccination shall be available to the employee and the labour health inspector.

(4) If it is impossible to make the working environment safe though applying the named methods, personal protective tools shall be distributed to the employees and rules for their use shall be established.

§ 7. Labour hygiene

(1) To avoid potential infection of the employees, the employer shall apply the following measures of labour hygiene:

- 1) prohibiting eating and drinking within the working environment affected by biological risk factors;
- 2) giving appropriate working clothes to the employees; to any employees working within the circle of effect of any biological risk factors belonging into 3rd or 4th risk group also protective costumes;
- 3) enabling the employees to use washrooms with shower facilities, antiseptic skin cleaning substances, and installing eye showers if necessary;
- 4) ensuring that all personal protection tools are cleansed and checked when the workday is over, and that they are returned to a fixed place where they are kept;
- 5) defining the rules and procedures for handling any materials or preparations of human or animal origin.

(2) If during the course of work process the working or protective clothes may be potentially contaminated by biological risk factors, the clothes shall be taken off before going out of the working room and kept into special labelled container, separately from other clothes, until cleansing and washing off any contamination that may be attached to such clothes.

(3) The employer shall ensure regular cleansing and washing of working and protective costumes, and their handling in accordance with the Waste Act (*RIIGI TEATAJA I* 1998, 57, 861; 1999, 23, 353) when they become unfit.

§ 8. Training employees

(1) The employer shall ensure sufficient appropriate training to the employees. The employee shall be informed and instructed about everything related to health risks of the working environment, measures of caution to avoid any effects of biological risk factors, hygienic requirements, use of tools of personal protection, avoidance of risk situations, and acting in case of risk of emergency.

(2) Training of employees shall be conducted before they begin working with biological risk factors, and periodically if necessary.

(3) The employees shall be additionally informed if new health risks emerge.

§ 9. Special cases of informing the employees

(1) The employer shall compose and approve written instructions for handling biological risk factors and ensure their availability to the employees, as well as exposing them at everybody's sight if necessary.

(2) There must be a written action plan exposed, specifying how to act in case of threat of emergency and what should be done to avoid and eliminate any emergency effects if the threat was caused by biological risk factors.

(3) The employer shall inform the employees and the working environment inspector immediately about any emergency that has occurred and each and every threat situation within the company whereby the biological risk factor may soak into the working environment and the employees may catch infection.

(4) The employer shall inform the employees and the working environment inspector about an emergency, its causes, possible effects and any measures of protection to be applied as fast as possible.

§ 10. Index of persons working within working environment affected by biological risk factors

(1) The employer shall keep records of any employees who have been or are potentially endangered by biological risk

factors of the 3rd and 4th risk groups because of their work.

(2) The following data concerning the employee shall be included in the index:

- 1) description of work task;
- 2) what kind of biological risk factor he or she was exposed to and duration of being exposed to such factor;
- 3) data on any threat situations and emergencies that have occurred.

(3) Any data concerning any employee entered into the index shall be preserved by the employer for at least 10 years after the time when the employee was exposed to the said risk factor for the last time.

(4) The employer shall ensure that in case of being exposed to biological risk factors that may cause:

- 1) persistent or latent infection;
- 2) catching a disease that can be diagnosed only years after;
- 3) catching a disease of a very long incubation period;
- 4) catching a disease with such symptoms that will occur once and again irrespective of any treatment received;
- 5) catching a disease with durable serious effects,

the data of the employees shall be preserved for 40 years after the time when the employees were exposed to the said risk factor for the last time.

(5) The employee shall be entitled to receive information about his or her data entered into the said index.

(6) The employer shall give the employees and the working environment inspector an opportunity to get acquainted with anonymous statistical data concerning the index.

(7) The labour health physician and the working environment expert of the company, and the labour inspector performing supervision shall be entitled to get acquainted with the employee index.

§ 11. Medical examination of employees

(1) The employer shall ensure that all employees who are exposed to biological risk factors go through prior and regular medical examination in accordance with established rules and regulations.

(2) If during the course of medical examination infection with biological risk factor or a disease is detected with one employee, the all the other employees who work in similar conditions must also go through medical examination. In such a case also an additional risk analysis of the working environment shall be conducted. The employees shall be vaccinated if necessary. (See also subsection 2 of section 6.)

(3) The employees shall be entitled to get to know about the results of their medical examination.

(4) The employer shall be entitled to get an overview of the results of medical examination of its employees.

(5) The employer shall preserve the results of medical examination of an employee for at least 10 years after the time when the employee was exposed to biological risk factors for the last time.

(6) Results of medical examination of those employees who have been exposed to such biological risk factors that may cause catching such diseases as specified in subsection 4 of section 10 shall be preserved for 40 years after last instance of being exposed to such risk factor.

§ 12. Data to be presented to the labour inspector

(1) Upon request from the labour inspector the employer shall be obliged to present the following information:

- 1) results of risk analysis of the working environment and initial data used at analysis;
- 2) list of works associated with threat of being infected by biological risk factors;
- 3) number of workers exposed to biological risk factors
- 4) name of working environment expert;
- 5) occupational health and safety measures applied at the workplace;
- 6) list of measures applied to protect the employees against effects of factors of the 3rd and 4th risk groups.

(2) The employer shall give notice to its local institution of Labour Inspectorate of any emergency and risk situation that may have occurred whereby biological risk factors leaked or may have leaked into the environment and people were or may have been infected and caught or may have caught any disease.

(3) When the company terminates its business, the endangered employees' index specified in section 10 of the Regulation and the results of medical examination of employees specified in section 11 shall be delivered to the local institution of Labour Inspectorate.

§ 13. Giving prior notice of handling biological risk factors

(1) The employer shall give relevant written notice to the local institution of Labour Inspectorate not later than 30 days before launching work with biological risk factors of the 2nd, 3rd or 4th risk groups for the first time.

(2) A repeated notice shall be given any time when a new factor of the 3rd or 4th risk group is going to be used, and if substantial changed are made in the working environment, as a result of which the contents of the previous notice become obsolete.

(3) Laboratories that render services of diagnosing factors of the 4th risk group shall only be required to give single notice before launching their business.

(4) The notice specified in subsections 1-3 of this section shall include the following:

- 1) name and address of the company;
- 2) name of working environment expert;
- 3) results of risk analysis of the working environment;
- 4) name of category and risk group of the biological risk factors affecting the working environment;
- 5) protective and preventive measures to be applied.

§ 14. Medical institutions and enterprises engaged in veterinary praxis

(1) A medical institution and an enterprise engaged in veterinary praxis shall take account of the threat that a human or an animal may be infected and any samples taken from them may contain biological risk factors.

(2) To avoid infection of employees, the employer shall apply the necessary cleansing and disinfection procedures, foresee safe handling of contaminated materials until their annihilation, and define rules and procedures for safe taking, exploring and handling samples taken from humans and animals.

(3) In isolation rooms for patients or animals infected or suspected to be infected with biological risk factors of 3rd or 4th risk groups, special measures presented in Column A of Appendix 1 shall be applied.

§ 15. Diagnostic and experimental laboratories

(1) In diagnostic and other laboratories where the employees are exposed to biological risk factors of the 2nd, 3rd or 4th risk groups for the purposes of diagnosing, research or studies, and in rooms where infected animals or animals carrying pathogenic bacteria are kept, special measures specified in Column A of Appendix 1 shall be applied to reduce the employees' risk of catching infection in accordance with the necessary safety level, observing the following principle:

- 1) if biological risk factors of the 2nd risk group are worked with, the laboratory shall comply with the requirements of safety level no. 2;
- 2) if factors of the 3rd risk group are worked with, the laboratory shall comply with the requirements of safety level no. 3;
- 3) if factors of the 4th risk group are worked with, the laboratory shall comply with the requirements of safety level no. 4.

(2) If the laboratory uses in its work processes any materials that may contain pathogenic bacteria, but this material is neither cultivated nor concentrated, then the laboratory shall comply at least with the requirements of safety level no. 2

§ 16. Industrial processes

(1) An enterprise that uses in its industrial processes any biological risk factors belonging to the 2nd, 3rd or 4th risk groups or whose processes involve risk of being exposed to such factors shall apply the special measures specified in Appendix 2 in accordance with the principle specified in subsection 1 of section 15.

(2) If the effect of the biological risk factor used is not precisely known, but the use of such factor may seriously threaten the health of the employee, the workplace shall comply at least with the requirements of safety level no. 3.

Chapter 4

INDEX OF BIOLOGICAL RISK FACTORS

§ 17. Principles of use of index

(1) Risk groups of biological risk factors entered into index are presented in Appendix 3.

(2) Only such factors have been included in the index which cause people to fall ill according to the knowledge available. Such factors that cause animals and plants to fall ill, but which do not threaten humans, have not been included in the index. The index does not include genetically transformed microorganisms.

(3) Categorisation into risk groups (hereinafter "categorisation") relies on the effect of these factors on the healthy human organism. The effect of the factors on the health of the employee in such cases where she or she already suffers from some disease, uses immunosuppressants, is immunodeficient or pregnant or breastfeeds a baby have not been taken account of. In such cases the additional risk arising from the employee's health condition should be taken account of at estimation of his or her health risk as described in section 3.

(4) Biological risk factors not contained in this index must not be automatically considered to belong into the 1st risk group. A biological risk factor that cannot be clearly classified into a special category must be classified into the highest group from amongst alternative risk groups.

(5) If the biological risk factor being handled cannot be found in the index, then the employer must classify it itself in accordance with the specifications presented in section 2.

(6) In cases where more than one species that constitutes a threat to humans belongs to the same family as the microorganism that is known as biological risk factor only the most widespread species have been included in the index. The rest of the species of the same family that are referred to by the abbreviation "spp" after the family name should also be considered as dangerous to health.

(7) In cases where only a family of microorganisms known as biological risk factors is listed in the index the species and trunks not dangerous to humans according to the knowledge available may be excluded from the index.

(8) If the virulence of the trunk has been weakened or if it has lost its virulent genes, the requirements of the safety level set for the risk group of the basic trunk may be ignored if the results of risk analysis of the working environment allow doing so. A weakened trunk may be used for example as a product or as part of a product for prophylactic or therapeutic purposes.

(9) Names of the biological risk factors presented in the index comply with the international nomenclatural and taxonomic agreements and knowledge that were valid at the time of compiling the index.

(10) The employer shall classify any viruses not contained in this index at least into the 2nd risk group, unless it finds certain proof that the virus is harmless to humans.

(11) The biological risk factors of the 3rd risk group marked with an asterisk (*) in the index may cause infection of an

employee only in certain circumstances, as they do not spread via air. In case of handling such risk factors the employer shall estimate which ones of the special measures of the relevant safety level should reasonably be applied and which ones could be ignored, taking account of the type of business and the amount of risk factor being handled.

(12) Requirements of the safety level corresponding to the risk group of parasites shall be applied at the workplace only in cases where the life cycle of the parasite is in such stage that is infectious towards the employee.

(13) The index also includes data showing whether the biological risk factor may cause allergy or toxication; whether there is an effective vaccine; and how long must the index of employees who have worked with biological risk factors be preserved by the employer after the employee's last instance of being exposed to the risk factor. Such data has been presented in the notes column using the following letters:

- 1) A – causes allergy;
- 2) D – index of employees who have worked with this risk factor should be preserved for more than 10 years after the employee's last instance of being exposed to the risk factor;
- 3) E – index of employees who have worked with this risk factor should be preserved for 40 years after the employee's last instance of being exposed to the risk factor;
- 4) T – produces toxin;
- 5) V – effective vaccine available.

Chapter 5 PROVISIONS FOR IMPLEMENTATION

§ 18. Entering the Regulation into force

(1) The Regulation shall enter into force on 1 July 2000.

(2) Enterprises whose working environment is affected by any biological risk factors of the 2nd, 3rd or 4th risk group shall give notice of their business to the local institution of Labour Inspectorate in the form specified in section 13 not later than within 6 months since the entering the Regulation into force.

¹ The Regulation takes account of the requirements of the following Directives of the European Community: 90/679/EEC (OJEC L 374, 12/31/1990, p. 1) and 93/88/EEC (OJEC L 268, 10/29/1993, p. 71); and of the following Directives of the European Commission: 95/30/EC (OJEC L 155, 7/6/1995, p. 41), 97/59/EC (OJEC L 282, 10/15/1997, p. 33) and 97/65/EC (OJEC L 335, 12/6/1997).

Prime Minister, Mart LAAR
Minister of Social Affairs, Eiki NESTOR
Secretary of State, Aino LEPIK von WIRÉN

Appendix No. 1 LEVELS OF SAFETY AND APPLICATION OF SPECIAL MEASURES (***)

A. Special measures	B. Levels of safety		
	2	3	4
1. Isolation of the workplace from other processes within the same building	No	Recommendable	Yes
2. Air circulation through filters (HEPA filter or an equivalent)	No	Yes, outflowing air	Yes, inflowing and outflowing air
3. Entrance allowed only for relevant employees	Recommendable	Yes	Yes, through an airlock
4. Workplace closable for disinfection in an airproof manner	No	Recommendable	Yes
5. Disinfection by an appropriate method	Yes	Yes	Yes
6. Lower pressure at the workplace as compared to the atmosphere pressure	No	Recommendable	Yes
7. Effective control over entrance of disseminators of infection (insects, mice, rats)	Recommendable	Yes	Yes
8. Waterproof and easily cleansable surfaces	Yes, tables	Yes, tables and floor	Yes, tables, ceiling, walls, floor
9. Acid-proof, base-proof and solvent-proof working surfaces, so that they can be disinfected	Recommendable	Yes	Yes
10. Safe preservation of the biological risk factor	Yes	Yes	Yes, absolutely definitely
11. Window in the room for watching what is going on	Recommendable	Recommendable	Yes
12. The laboratory may contain only the tools used in	No	Recommendable	Yes

the laboratory			
13. Infectious materials, incl. animals, are handled in a laminar closet	In case of need	Yes, if infection may spread via air	Yes
14. Kiln for annihilation of infectious material	Recommendable	Yes, available if needed	Yes, available on the premises

(***) The listed special measures should be applied depending on the type of business of the laboratory, results of risk analysis of the working environment, and infectiousness of the biological risk factor.

Appendix No. 2

SAFETY LEVELS AND APPLICATION OF SPECIAL MEASURES IN CASE OF INDUSTRIAL PROCESSES

Biological risk factors of the 1st risk group

When working with biological risk factors of the 1st risk group, including viable and weakened vaccines, requirements of labour hygiene and occupational safety should be strictly observed.

Biological risk factors of the 2nd, 3rd and 4th risk groups

Depending on the level of danger associated with the process or a part of the process, it may be reasonable to select and combine requirements of several safety levels.

A. Special measures	B. Safety levels		
	2	3	4
1. The process dealing with viable organisms must be separated from the rest of the working environment (closed system)	Yes	Yes	Yes
2. Processing the exhaust gas produced within the closed system	Minimise inflow into working environment	Avoid inflow into working environment	Avoid inflow into working environment
3. At taking samples from the closed system, at adding substances, and at transmission of viable organisms from one system into another	Minimise inflow into working environment	Avoid inflow into working environment	Avoid inflow into working environment
4. Liquid waste cannot be taken out from the closed system before viable organisms have been	made harmless	made harmless by a chemical or physical method	made harmless by a chemical or physical method
5. Use of gaskets that	minimise inflow into working environment	avoid inflow into working environment	avoid inflow into working environment
6. Closed systems must be located in a region that is under control	Voluntary	Voluntary	Yes
(1) Installation of warning sign «Biological threat»	Voluntary	Yes	Yes
(2) Entrance allowed only for relevant employees	Voluntary	Yes	Yes, through an airlock
(3) Employees must wear protective clothes	Yes, working clothes	Yes	Changing all the clothes
(4) Tools for employees for cleansing and washing off contamination	Yes	Yes	Yes
(5) Employees must take a shower before leaving the region	No	Voluntary	Yes
(6) The used washing water is accumulated and made harmless	No	Voluntary	Yes
(7) Ensuring sufficient ventilation to reduce air contamination	Voluntary	Voluntary	Yes
(8) Creating low pressure within the working room	No	Voluntary	Yes
(9) Air circulation through filters (HEPA filter or an equivalent)	No	Voluntary	Yes
(10) Such size of the region that the whole content of the closed system would not exit the boundaries of the region in case of leak	No	Voluntary	Yes
(11) It is possible to close the region in an airtight manner for disinfection	No	Voluntary	Yes
(12) Waste water is made harmless before its canalisation into the sewer system	Yes, subject to appropriate treatment	Yes, subject to chemical or physical treatment	Yes, subject to chemical or physical treatment

Appendix No. 3
RISK GROUPS OF BIOLOGICAL RISK FACTORS

Bacteria

Biological risk factor	Risk group	Notes
<i>Actinobacillus actinomycetemcomitans</i>	2	
<i>Actinomadura madurae</i>	2	
<i>Actinomadura pelletieri</i>	2	
<i>Actinomyces gerensceriae</i>	2	
<i>Actinomyces israelii</i>	2	
<i>Actinomyces pyogenes</i>	2	
<i>Actinomyces</i> spp	2	
<i>Arcanobacterium haemolyticum</i> (<i>Corynebacterium haemolyticum</i>)	2	
<i>Bacillus anthracis</i>	3	
<i>Bacteroides fragilis</i>	2	
<i>Bartonella bacilliformis</i>	2	
<i>Bartonella quintana</i> (<i>Rochalimaea quintana</i>)	2	
<i>Bartonella</i> (<i>Rochalimaea</i>) spp	2	
<i>Bordetella bronchiseptica</i>	2	
<i>Bordetella parapertussis</i>	2	
<i>Bordetella pertussis</i>	2	V
<i>Borrelia burgdorferi</i>	2	
<i>Borrelia duttonii</i>	2	
<i>Borrelia recurrentis</i>	2	
<i>Borrelia</i> spp	2	
<i>Brucella abortus</i>	3	
<i>Brucella canis</i>	3	
<i>Brucella melitensis</i>	3	
<i>Brucella suis</i>	3	
<i>Burkholderia mallei</i> (<i>Pseudomonas mallei</i>)	3	
<i>Burkholderia pseudomallei</i> (<i>Pseudomonas pseudomallei</i>)	3	
<i>Campylobacter fetus</i>	2	
<i>Campylobacter jejuni</i>	2	
<i>Campylobacter</i> spp	2	
<i>Cardiobacterium hominis</i>	2	
<i>Chlamydia pneumoniae</i>	2	
<i>Chlamydia trachomatis</i>	2	
<i>Chlamydia psittaci</i> (avifauna trunks)	3	
<i>Chlamydia psittaci</i> (other trunks)	2	
<i>Chryseobacterium meningosepticum</i>	2	
<i>Clostridium botulinum</i>	2	T
<i>Clostridium perfringens</i>	2	
<i>Clostridium tetani</i>	2	T,V
<i>Clostridium</i> spp	2	
<i>Corynebacterium diphtheriae</i>	2	T,V
<i>Corynebacterium minutissimum</i>	2	
<i>Corynebacterium pseudotuberculosis</i>	2	
<i>Corynebacterium</i> spp	2	
<i>Coxiella burnetii</i>	3	
<i>Edwardsiella tarda</i>	2	
<i>Ehrlichia sennetsu</i> (<i>Rickettsia sennetsu</i>)	2	
<i>Ehrlichia</i> spp	2	
<i>Eikenella corrodens</i>	2	
<i>Enterobacter aerogenes/cloacae</i>	2	
<i>Enterobacter</i> spp	2	
<i>Enterococcus</i> spp	2	

<i>Erysipelothrix rhusiopathiae</i>	2	
<i>Escherichia coli</i> (except for nonpathogenic trunks)	2	
<i>Escherichia coli</i> verocytotoxin-producing strains, e.g. O157:H7, O103	3 (*)	T
<i>Legionella bozemanii</i>	2	
<i>Francisella tularensis</i> (A type)	3	
<i>Francisella tularensis</i> (B type)	2	
<i>Fusobacterium necrophorum</i>	2	
<i>Gardnerella vaginalis</i>	2	
<i>Haemophilus ducreyi</i>	2	
<i>Haemophilus influenzae</i>	2	
<i>Haemophilus</i> spp	2	
<i>Helicobacter pylori</i>	2	
<i>Klebsiella oxytoca</i>	2	
<i>Klebsiella pneumoniae</i>	2	
<i>Klebsiella</i> spp	2	
<i>Legionella pneumophila</i>	2	
<i>Legionella</i> spp	2	
<i>Leptospira interrogans</i> (all serotypes)	2	
<i>Listeria monocytogenes</i>	2	
<i>Listeria ivanovii</i>	2	
<i>Morganella morganii</i>	2	
<i>Mycobacterium africanum</i>	3	V
<i>Mycobacterium avium/intracellulare</i>	2	
<i>Mycobacterium bovis</i> (except for BCG trunk)	3	V
<i>Mycobacterium chelonae</i>	2	
<i>Mycobacterium fortuitum</i>	2	
<i>Mycobacterium kansasii</i>	2	
<i>Mycobacterium leprae</i>	3	
<i>Mycobacterium malmoense</i>	2	
<i>Mycobacterium marinum</i>	2	
<i>Mycobacterium microti</i>	3 (*)	
<i>Mycobacterium paratuberculosis</i>	2	
<i>Mycobacterium scrofulaceum</i>	2	
<i>Mycobacterium simiae</i>	2	
<i>Mycobacterium szulgai</i>	2	
<i>Mycobacterium tuberculosis</i>	3	V
<i>Mycobacterium ulcerans</i>	3 (*)	
<i>Mycobacterium xenopi</i>	2	
<i>Mycoplasma hominis</i>	2	
<i>Mycoplasma caviae</i>	2	
<i>Mycoplasma pneumoniae</i>	2	
<i>Neisseria gonorrhoeae</i>	2	
<i>Neisseria meningitidis</i>	2	V (for a and c-serotypes)
<i>Nocardia asteroides</i>	2	
<i>Nocardia brasiliensis</i>	2	
<i>Nocardia farcinica</i>	2	
<i>Nocardia nova</i>	2	
<i>Nocardia otitidiscaviarum</i>	2	
<i>Orientia tsutsugamushi</i>	3	
<i>Pasteurella multocida</i>	2	
<i>Pasteurella</i> spp	2	
<i>Peptostreptococcus anaerobius</i>	2	
<i>Plesiomonas shigelloides</i>	2	

Porphyromonas spp	2	
Prevotella spp	2	
Proteus mirabilis	2	
Proteus penneri	2	
Proteus vulgaris	2	
Providencia alcalifaciens	2	
Providencia rettgeri	2	
Providencia spp	2	
Pseudomonas aeruginosa	2	
Rhodococcus equi	2	
Rickettsia akari	3 (*)	
Rickettsia canada	3 (*)	
Rickettsia conorii	3	
Rickettsia montana	3 (*)	
Rickettsia typhi (Rickettsia mooseri)	3	
Rickettsia prowazekii	3	
Rickettsia rickettsii	3	
Rickettsia spp	2	
Salmonella arizonae	2	
Salmonella enteritidis	2	
Salmonella typhimurium	2	
Salmonella paratyphi A, B, C	2	
Salmonella typhi	3 (*)	V
Salmonella (other serotypes)	2	
Serpulina spp	2	
Shigella boydii	2	
Shigella dysenteriae (type 1)	3 (*)	T
Shigella dysenteriae (other types)	2	
Shigella flexneri	2	
Shigella sonnei	2	
Staphylococcus aureus	2	
Streptobacillus moniliformis	2	
Streptococcus pneumoniae	2	
Streptococcus pyogenes	2	
Streptococcus suis	2	
Streptococcus spp	2	
Treponema carateum	2	
Treponema pallidum	2	
Treponema pertenuae	2	
Treponema spp	2	
Vibrio cholerae (incl. El Tor)	2	
Vibrio parahaemolyticus	2	
Vibrio spp	2	
Yersinia enterocolitica	2	
Yersinia pestis	3	V
Yersinia pseudotuberculosis	2	
Yersinia spp	2	

(*) See subsection 11 of section 17.

Viruses**

Biological risk factor	Risk group	Notes
Adenoviridae	2	
Arenaviridae <i>LCM-Lassa-Virus Complex (Old World arenaviruses):</i>		
Lassa virus	4	

Lymphocyte choriomeningitis virus (neurotrophic trunks)	3	
Lymphocyte choriomeningitis virus (other trunks)	2	
Mopeia virus	2	
Other viruses of <i>LCM-Lassa-Virus Complex</i>	2	
<i>Tacaribe – Virus Complex (New World arenaviruses):</i>		
Guanarito virus	4	
Junin virus	4	
Sabia virus	4	
Machupo virus	4	
Flexali virus	3	
Other viruses of <i>Tacaribe Complex</i>	2	
Astroviridae	2	
Bunyaviridae		
Bunyamwera virus	2	
Germiston virus	2	
Belgrade (Dobrava) virus	3	
Bhanja virus	2	
Californian encephalitis virus	2	
Uukuniemi virus	2	
Hantaviruses		
Sin Nombre (Four corners) virus	4	
Hantaan (Korean haemorrhagic fever) virus	3	
Seoul virus	3	
Puumala virus	3	
Prospect Hill virus	2	
Other hantaviruses	2	
Nairo viruses		
Crimean-Congolese haemorrhagic fever virus	4	
Hazara virus	2	
Flebo viruses		
Rift Valley fever virus	3	
Sandfly fever virus	2	
Toscana virus	2	
Filoviridae		
Ebola virus	4	
Marburg virus	4	
Flaviviridae		
Australian (Murray Valley) encephalitis virus	3	
European tick-borne encephalitis virus	3 (*)	V
Absetarov virus	3	
Hanzalova virus	3	
Hypri virus	3	
Kumlinge virus	3	V
Dengue virus (types 1-4)	3	
C hepatitis virus	3 (*)	E
G hepatitis virus	3 (*)	D
Japanese encephalitis virus	3	V
Kyasanur Forest disease virus	3	V
Sheep's flavivirus disease (louping ill) virus	3 (*)	
Omsk haemorrhagic fever virus (a)	3	V
Powassan virus	3	
Rocio disease virus	3	
Russian spring-summer encephalitis virus	3	V
St. Louis encephalitis virus	3	

Wesselsbron virus	3 (*)	V, E
Yellow fever virus	3	V
Other pathogenic flaviviruses	2	
Hepadnaviridae		
B hepatitis virus	3 (*)	V, E
D (delta) hepatitis virus (b)	3 (*)	E
Herpesviridae		
Cytomegalovirus (human herpesvirus 5)	2	
Epstein-Barr virus (human herpesvirus 4)	2	
Monkeys' herpesvirus (B-virus)	4	
Simple herpes (blister) viruses 1 and 2 (human herpesviruses 1 and 2)	2	
Chickenpox and bar blister virus (human herpesvirus 3)	2	
Human herpesvirus 6	2	
Human herpesvirus 7	2	
Human herpesvirus 8	2	D
Caliciviridae		
Norwalk virus	2	
E hepatitis virus	3 (*)	
Other kalitsiviruses	2	
Coronaviridae	2	
Orthomyxoviridae		
Influenza viruses (types A, B and C)	2	V (c)
Tick-borne orthomyxoviridae (Dhori and Thogoto viruses)	2	
Papovaviridae		
Human papillomaviruses	2	D (d)
BK and JC viruses	2	D (d)
Paramyxoviridae		
Measles virus	2	V
Mumps virus	2	V
Newcastle disease virus	2	
Parainfluenza viruses (types 1-4)	2	
Respiratory syncytial (RS)virus	2	
Parvoviridae		
Human parvovirus (B19)	2	
Picornaviridae		
Enterovirus, types 68-71, (70 - virus of acute haemorrhagic conjunctivitis)	2	
Coxsackie viruses	2	
Echo viruses	2	
A hepatitis virus	2	V
Polioviruses	2	V
Rhinoviruses	2	
Poxviridae		
Buffalopox virus (e)	2	
Cowbox oxen virus	2	
Elephantpox virus (f)	2	
Milker's node virus (MNV)	2	
Molluscum contagiosum virus	2	
Monkey s pox virus	3	V
Orf virus	2	
Rabbitpox virus (g)	2	
Vaccinia virus	2	
Variola (major/minor) virus	4	V
Whitepox virus (Variola virus)	4	V
Yatapox (Tana and Yaba disease) virus	2	

Reoviridae		
Coltivirus	2	
Human rotaviruses	2	
Orbiviruses	2	
Reoviruses	2	
Retroviridae		
Human immunodeficiency viruses	3 (*)	D
Human T-cell lymphotropic viruses (HTLV) types 1 and 2	3 (*)	D
SIV virus (h)	3 (*)	
Rhabdoviridae		
Rabies virus	3 (*)	V
Visicular stomatitis virus	2	
Togaviridae		
Alfavirus		
Eastern equine encephalomyelitis virus	3	V
Bebaru virus	2	
Chikungunya virus	3 (*)	
Everglades virus	3 (*)	
Mayaro virus	3	
Mucambo virus	3 (*)	
Ndumu virus	3	
O`nyong-nyong virus	2	
Ross River virus	2	
Semliki Forest virus	2	
Sindbisi virus	2	
Tonate virus	3 (*)	
Venezuelan equine encephalomyelitis virus	3	V
Western equine encephalomyelitis virus	3	V
Other alfaviruses	2	
Rubiviruses (rubella)	2	V
Toroviridae	2	
Unclassified viruses:		
Horses measles virus	4	
Still unknown hepatitis viruses	3 (*)	D
Factors related to transmissible spongiformy encephalopathy (TSE):		
Creutzfeldt-Jakob disease	3 (*)	D (d)
Variants of Creutzfeldt-Jakob disease	3 (*)	D (d)
BovineOxen spongiformy encephalopathy (BSE) and other animal diseases associated with TSE (i)	3 (*)	D (d)
Kuru disease	3 (*)	D (d)

(**) See subsection 10 of section 7.

(*) See subsection 11 of section 17.

(a) Tick-borne -encephalitis

(b) D hepatitis virus is pathogenic towards the employee only if the employee is simultaneously or prior to infected by B hepatitis virus

(c) Only for A and B types

(d) Preservation of the index is necessary only if the employee has been in direct contact with the factor

(e) Two viruses have been identified: buffalopox type and variant of vaccine virus

(f) Variant of cattle smallpox virus

(g) Variant of vaccine virus

(h) There is currently no evidence that other retroviruses of monkeys cause infection of humans. Just for precaution it is recommendable to apply special measures of the 3rd safety level.

(i) There are no proven data that the factor causing ~~bovine~~ spongiformy encephalopathy would infect humans. Nevertheless it is recommended to apply special measures of the 3rd safety level in the laboratory.

Parasites

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Biological risk factor	Risk group	Notes
Acanthamoeba castellani	2	
Ancylostoma duodenale	2	
Angiostrongylus cantonensis	2	
Ascaris lumbricoides	2	A
Ascaris suum	2	A
Babesia divergens	2	
Babesia microti	2	
Balantidium coli	2	
Brugia malayi	2	
Brugia pahangi	2	
Capillaria philippinensis	2	
Capillaria spp	2	
Clonorchis sinensis	2	
Clonorchis viverrini	2	
Cryptosporidium parvum	2	
Cryptosporidium spp	2	
Cyclospora cayetanensis	2	
Dipetalonema streptocerca	2	
Diphyllobothrium latum	2	
Dracunculus medinensis	2	
Echinococcus granulosus	3 (*)	
Echinococcus multilocularis	3 (*)	
Echinococcus vogeli	3 (*)	
Entamoeba histolytica	2	
Fasciola gigantica	2	
Fasciola hepatica	2	
Fasciolopsis buski	2	
Giardia lamblia (Giardia intestinalis)	2	
Hymenolepis diminuta	2	
Hymenolepis nana	2	
Leishmania braziliensis	3 (*)	
Leishmania donovani	3 (*)	
Leishmania aethiopica	2	
Leishmania mexicana	2	
Leishmania peruviana	2	
Leishmania tropica	2	
Leishmania major	2	
Leishmania spp	2	
Loa loa	2	
Mansonella ozzardi	2	
Mansonella perstans	2	
Naegleria fowleri	3	
Necator americanus	2	
Onchocerca volvulus	2	
Opisthorchis felinus	2	
Opisthorchis spp	2	
Paragonimus westermani	2	
Plasmodium falciparum	3 (*)	
Plasmodium spp (inimese ja ahvi)	2	
Sarcocystis suihominis	2	
Shistosoma haematobium	2	
Shistosoma intercalatum	2	
Shistosoma japonicum	2	

Shistosoma mansoni	2	
Shistosoma mekongi	2	
Strongyloides stercoralis	2	
Strongyloides spp	2	
Taenia saginata	2	
Taenia solium	3 (*)	
Toxocara canis	2	
Toxoplasma gondii	2	
Trichinella spiralis	2	
Trichuris trichiura	2	
Trypanosoma brucei brucei	2	
Trypanosoma brucei gambiense	2	
Trypanosoma brucei rhodesiense	3 (*)	
Trypanosoma cruzi	3	
Wuchereria bancrofti	2	

(*) See subsection 11 of section 17.

Fungi

Biological risk factor	Risk group	Notes
Aspergillus fumigatus	2	A
Blastomyces dermatitidis (Ajellomyces dermatitidis)	3	
Candida albicans	2	A
Candida tropicalis	2	
Cladophialophora bantiana (earlier Xylohypha bantiana, Cladosporium bantianum, or trichoides)	3	
Coccidioides immitis	3	A
Cryptococcus neoformans var neoformans (Filobasidiella neoformans var neoformans)	2	A
Cryptococcus neoformans var gattii (Filobasidiellabacillispora)	2	A
Emmonsia parva var parva	2	
Emmonsia parva var crescens	2	
Epidermophyton floccosum	2	A
Fonsecaea pedrosoi	2	
Histoplasma capsulatum var capsulatum (Ajellomyces capsulatus)	3	
Histoplasma capsulatum duboisii	3	
Madurella grisea	2	
Madurella mycetomatis	2	
Microsporium spp	2	
Neotestudina rosatii	2	
Paracoccidioides brasiliensis	3	
Penicillium marneffeii	2	A
Scedosporium apiospermum (Pseudoallescheria boydii)	2	
Scedosporium prolificans (inflatum)	2	
Sporothrix schenckii	2	
Trichophyton rubrum	2	
Trichophyton spp	2	