

## **M9-EN.5 BIOLOGICAL HAZARDS**

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### **Short description of the chapter (M9.5.jpg)**

The purpose of this chapter is to introduce biological factors of occupational risk in the sector of hotels and restaurants and exposure of **kitchen employees** to biological risk inherent in food preparation, storage and handling.

Goals of this chapter:

- Define biological risk factors and types of occurrence
- Present possible prevention measures to reduce the negative effect on human health
- Discuss measures that must be taken to ensure safe use of swimming pools

Information presented in this chapter will help the managers to determine biological factors of occupational risk in hotel and restaurant sector, to assess each particular situation and take appropriate preventive measures to prevent or reduce the risk.

### **M9-EN.5.1. Biological factors of occupational risk and impact on human health**

#### **M9.5.1.jpg**

Biological risk factors are:

- Microorganisms (bacteria, viruses, parasites, fungi, etc.)
- Substances of biological origin
- Natural components of the organisms (amino acids, vitamins, proteins etc.)

As biological substances are usually invisible, it is difficult to assess the exposure.

Biological substances in all the places that have contact with can affect employees:

- Natural or organic substances: e.g.; soil, clay, plant substances)
- Substances of animal origin (chicken, pork, beef, eggs etc)
- Food
- Organic dust (e.g. flour)
- Waste or effluent
- Blood or other bodily fluids (e.g. liquid from defrosting meat or the like)

Taking into consideration type of activities of employees working in hotel and restaurant sector and tools and equipment used (see: M9-EN.1.2, M9-EN.1.3) we may see that all **kitchen staff** involved in the process of food preparation, storage and handling are most often exposed to biological risk factors.

Biological factors can cause 3 types of illnesses:

- **Infections** caused by parasites, viruses or bacteria, e.g. infectious or virus caused gastro-enteritis, hepatitis A, Roto virus and the like
- **Allergies** caused by mould or organic dust, e.g. flour dust, enzyme mites etc.
- **Poisoning or intoxication**, e.g. salmonella poisoning, a food-born illness caused by insufficient thermal processing of food products or contact of cooked and uncooked products

Microorganisms can access a human body in different ways:

- Aerosolized droplets through airways
- Gastrointestinal – through digestive tract
- Transmissible – from blood to blood after sting of an insect
- Contact – through skin or mucous membrane

Pathogenesis of microbes (ability to cause a disease) depends on their genetic properties and many other circumstances. Microbes spread and multiply in the place of penetration, cause process of infection that depends on quantity of microbes, their properties (virulence and toxicity), place of penetration and immunity of the organism.

### **M9-EN.5.2 Safety measures - The basic principles of good hygiene practice**

Considering biological risk factors discussed in the previous chapter, we can make a conclusion that one of the main ways to avoid the negative effect of these factors both to employees and customers are the principles of good hygiene practice. **M9.5.2.jpg**

The following should be determined in the assessment of biological risk from the point of view of good hygiene practice:

- Is food product delivery-acceptance log maintained in the enterprise?
- Is food product storage log maintained in the enterprise?
- Is thermal processing temperature and time taking log maintained in the enterprise?
- Is cleaning work log maintained in the enterprise?
- Are documents confirming that the employees are introduced to legislative acts and their amendments regulating food handling and safety filed?
- Do employees preparing food have necessary knowledge about hygiene?
- Do employees handling food have regular health check-ups?
- Does the enterprise have a valid contract with an accredited laboratory to test raw foodstuff, food products, water, and effluents?
- Does the enterprise have a valid contract with pest exterminating company?
- Does the enterprise have a valid contract with refuse handling company?

### **M9-EN.5.3 Safety measures - Staff hygiene and health**

Employee hygiene and health is one of the main ways to avoid risk related to biological factors. (**M9.5.3.jpg**) Below examples of rules are given, all employees working with foodstuff must follow that:

- Prior to starting work, all employees handling food must have a medical check-up and hold a personal health check-up. Health check-ups must be performed annually
- Employees handling foodstuff must hold certificates showing proof of mandatory course on hygiene taken
- Ill employees with at least one of these symptoms: diarrhoea, hepatitis, fever, sore throat with fever, secretion from nose, eyes or ears, infected or open wound, contagious dermatitis which can be transmitted through food are not allowed to work in places where food is handled

- All employees of the enterprise must be informed about rules on hand washing and follow the rules in their workplaces
- Hands must be washed before work, after each break, before starting a new operation, having touched decayed foodstuff, various waste, after using the toilet, after touching money and so on
- Hand washing instructions must be placed above wash basins
- Disposable towels must be available at every wash basin
- Use electric dryers in remises where foodstuff is handled is not allowed
- All employees handling foodstuff must have at least three sets of work clothes so that dirty clothes can be changed by clean ones

All employees must be introduced to these requirements, regularly instructed, trained and examined. Prevention and control helps to avoid large-scale health disorders.

#### **M9-EN.5.4. Safety measures - Storing of waste and technical materials**

Proper handling of food remains/waste, cleaning of dish washing equipment and places and cooling the premises is essential measures preventing the growth of bacteria and surviving spores. (M9.5.4.jpg)

The following must be determined during risk assessment:

- Is food and non-food waste generated in the process of food preparation collected into special closed containers lined with polyethylene bags?
- Are waste bins made of impermeable material, easily cleaned and disinfected?
- Is food and non-food waste taken away from food handling premises into closed containers outside?
- Is waste sorted, if necessary?
- Are waste bins emptied when 2/3 of the bin is filled with waste?
- Are plastic bags tied up and taken away into outside containers?
- Are waste bins cleaned, washed and disinfected at least once a day?
- Is the workplace free of any substances that can contaminate food?
- Are premises ventilated to avoid formation of mould?

- Are premises cleaned as scheduled?

### **M9-EN.5.5. Safety measures - Cleaning, washing, disinfecting**

The main purpose of keeping premises clean is preventing the growth of bacteria and surviving spores by removing dirt and organic waste. Lithuanian like other European countries has a number of rules, norms and regulations ensuring cleanliness in food preparation enterprises. (M9.5.5.jpg)

The following must be determined during the assessment of cleaning, washing and disinfecting procedure:

- Are detergents used for cleaning allowed to be used in catering industry?
- Are chemical substances used following the manufacturers directions?
- Are premises, equipment and surfaces cleaning, washing and disinfecting rules (plans) prepared (##D5##) and the following is determined:
  - Objects to be cleaned and disinfected
  - Frequency of object cleaning
  - Ways and methods of cleaning
- Are premises, equipment and surfaces cleaning, washing and disinfecting procedures and schedules developed and implemented?
- Are documents confirming the compliance with the rules, procedures and schedules filed?
- Are tools used for cleaning properly labelled (by purpose)?
- Are dishwashing rules prepared?
- Does the staff comply with dishwashing rules?
- Are work safety rules for using cleaning and disinfecting substances prepared?
- Does the staff wear protective gloves?

### **M9-EN.5.6 Safety measures - Rodent and insect eradication**

Pest control is a very important biological risk prevention measure as pests transmit many infectious diseases. (M9.5.6.jpg)



The following should be determined in the assessment of pest control:

- Is there a valid contract with pest exterminating company?
- Are pest control measures applied on a regular basis?
- Are pest control measures efficient (any traces of pest existence)?
- Is food waste and other refuse regularly collected, removed and stored in closed bins?
- Premises where food is handled free from unnecessary things and packaging?
- Are all measures taken to prevent pests from getting into food handling and storage areas? E.g. do doors close tightly, are ventilation openings equipped with screens?
- Do pest control measures comply with requirements of legal acts and ensure that food is not poisoned with pest baits (HN 90:2000)

**Some interesting facts about pests:**

1. Pests such as mice, rats, cockroaches, bugs and crawling insects transmit various infectious diseases.
2. Cockroaches can not only cause material harm by contaminating food, but also have a negative psychological effect giving rise to phobias. Besides, extermination of cockroaches requires a large amount of insecticides which may result in poisoning if chemical substances are used inappropriately.
3. Rodents not just devour the food but contaminate it with excrements, urine, fur, offal. According to some authors, the losses resulting from contamination by rodents are ten times higher compared to destroyed food.

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**M9-EN.5.7. Safety measures - Swimming pools**

Swimming pool water is a perfect media for proliferation of various microorganisms (bacteria, fungi and algae). Rapidly propagating bacteria on swimming pool surfaces or in dreggy water may cause illnesses and infections for those swimming in the pool.

The compliance of pool water quality with HN requirements is one of the key factors protecting the swimmers from negative health effects.

The following shall be considered to ensure health and safety of swimming pool users:

- Pools must be designed, installed and remodeled in compliance with applicable laws and regulations

- Floor surface and walls of the pool, changing rooms and showers shall be water impermeable and resistant to mildew and other fungi, frequent cleaning, chemical agents, easily cleaned and disinfected
- A separate room must be installed for dosing and filtering of chemical agents
- All swimming pools must have a separate filtering and agent dosing system along the perimeter of the pool
- A required number of sanitary equipment must be installed in service premises
- Pool water must be coagulated, filtered and disinfected
- Disinfecting substances must be certified and approved
- Microclimate in pool premises must comply with HN requirements
- A suitable heating and ventilation system must be installed
- A system of chemical agents and physical factors (UV rays and the like) must be used for pool water disinfecting
- Pools must be cleaned and disinfected as often as required by hygiene norms (e.g. pool bottom must be pumped and brushed at least twice per week and walls at least once in two weeks. Once per year (in smaller pools once every three months) water must be removed from the pool and the entire system, pool bottom and walls must be cleaned and disinfected by high-pressure equipment. After cleaning and disinfecting surfaces must be flushed with clean water

**M9-EN.5.7. Self-assessment test**

Having analysed the aforementioned biological risk factors list biological hazards encountered in the work place. Fill in the form below using the template. You can check your knowledge: **##D6##**.

Biological risk factors		Employee	Harm	Essential safety measures
Activity/source	Hazard description			