APPROVED,

Prof. univ. Manuella MILITARU, DVM, PhD

INTERIM DEAN FMV,
Chairman of the FMV Biosafety Commission

MANUAL
Biosecurity and biosafety standard operating procedures applied in the Faculty of Veterinary Medicine, UASVM Bucharest

Controlled copy	**YES**	**X**	**NO**	

Drafted ed 4	Advised
Members of the FMV Biosafety Commission: Tăpăloagă Dana Tudor Niculae Goran Gheorghe Valentin Roşu Petronela Ţogoe Dorin Gonciarov Magdalena Purdoiu Letiţia Ghită Marian Bărăităreanu Stelian Ciobotaru-Pirvu Emilia Codreanu Iuliana Mitrea Liviu Ioniţă Lucian Mitranescu Elena Petcu Carmen Gurău Maria Dumitrescu Iulian Mocanu Jacqueline Negoiţă Carmen Ilie Lucian Duţulescu Alexandru Docita Ioan Dumitru Florin **Date:**	**Name:** **Codreanu Mario** FMV Biosafety Officer **Signature:** **Date:**

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EXECUTIVE SUMMARY

This Manual aims to establish standard biosecurity operational procedures for activities carried out within the Faculty of Veterinary Medicine by all staff, students and visitors.

The manual is written in chapters and subchapters that describe how and by changes in facilities, equipment, biosecurity procedures, good laboratory practices and good clinical practices are decided, communicated to staff, students, stakeholders, implemented, assessed and revised.

Regulations and responsibilities are as set out below.

The FVM Biosecurity Commission (BC-FVM) is an interdisciplinary professional advisory group of experts, which provides recommendations in the field of biosecurity in teaching activities (e.g., practical work, clinical and paraclinical activities, and workshops). Members have extensive expertise in the use and / or control of many types of biohazardous materials, techniques and procedures.

The FVM Biosecurity Officer (OBS) is one of the members of the FVM Management Board, appointed by the FVM Management Office at the proposal of the FVM Dean.

The General principles of biosecurity applied in FVM cover regulations related to staff biosecurity (hand hygiene, personal protective equipment and street clothes, safety of sharp objects, biosecurity and hygiene in patient care, protection of staff who sanitize the premises, consumption of food and beverages), facilities biosecurity (cleaning and disinfection of equipment and work surfaces, waste disposal, disinfectants), and break of the transmission cycles (risks associated with staff, students, visitors, clients, pets other than patients, identification of risks of transmission and contact of pathogens).

Biosecurity of medicines covers rules of procedure and responsibilities related to storage and access, expiry date, preparation of medication and return of medicines.

Biosecurity principles applied in clinical activities are elaborated in Biosecurity Standard Operating Procedures (SOP) for equines, large ruminants, small ruminants, pigs, birds, dogs, cats and other pets. Each SOP provides rules of procedure and responsibilities about protective equipment, hygiene of instruments, equipment and facilities, patient hygiene, and Biosecurity when visiting breeding units (e.g., studs, farms, and animal shelters).

Biosecurity principles applied in food science provides rules of procedure and responsibilities about protective equipment, hygiene of instruments, equipment and facilities, bio-waste management, and activities in food industry units (e.g., slaughterhouses, meat cutting plants, and meat processing plants).

Biosecurity principles applied in the clinical laboratory of FVM provides rules of procedure and responsibilities about protective equipment, hygiene of instruments, equipment and facilities, and bio-waste management.

Biosecurity principles applied to practical anatomy works provides rules of procedure and responsibilities about staff biosecurity, hygiene of instruments, equipment and facilities, and management of animals, bio-waste and corpses.

Biosecurity principles applied in the microbiology laboratory provides specific rules of procedure and responsibilities about protective equipment, hygiene of facilities, and management of bio-waste.

Biosecurity principles applied in the necropsy room provides specific rules of procedure and responsibilities about protective equipment, hygiene of facilities, and management of bio-waste.

The Biosecurity manual provides specific rules of procedure and responsibilities applied in the Teaching-Farm “Belciugatele”, Emergency Veterinary University Hospital “Prof Alin Bartoiu”, University Center for Experimental Medicine, equine isolation facility, livestock treatment and isolation unit, Veterinary Sanitary Circumscriptions, and zoological garden.

The Biosecurity manual contains definitions relevant to standard biosecurity operational procedures, forms, dossiers and registers used, usable biocides, their spectrum and characteristics of action, biohazards, waste management, reportable diseases and biocidal products in product type 4 which are approved on the territory of Romania. The revisions are performed by the BC-FVM, whenever necessary, at the request of the Biosecurity Officer.

1. PURPOSE

- This Manual, code **POS-BS-FVM**, aims to establish biosecurity and biosafety standard operational procedures for activities in the Faculty of Veterinary Medicine.

2. APLICATION DOMAIN

- It is applied in USAMV Bucharest, Faculty of Veterinary Medicine.

3. REFERENCE DOCUMENTS

SR EN ISO 9000:2006	- Quality management system. Fundamental principles and vocabulary.
SR EN ISO 9001:2008	- Systems of quality management. Institutional requirements.
PG-01	- Design and management of procedures.
OIE Terrestrial Manual 2015.	- Biosafety and biosecurity: Standard for managing biological risk in the veterinary laboratory and animal facilities. Chapter 1.1.4. https://www.oie.int/fileadmin/Home/eng/Health_standards/tahm/1.01.04_BIOSAFETY_BIOSECURITY.pdf
FVM Liege, Belgia	- Biosecurity SOPs applied to the Faculty of Veterinary Medicine, Liège University http://www2.FVM.ulg.ac.be/actualites/Biosecurity_Manual_Final_6Jan10.pdf.

4. TERMINOLOGY; ABBREVIATIONS

4.1. Terminology

- Not applicable.

4.2. Abbreviations

- **QMS** - Quality Management Sistem
- **SOP** - Standard Operational Procedures
- **FVM** - Faculty of Veterinary Medicine
- **UASVM** - University of Agronomic Sciences and Veterinary Medicine of Bucharest
- **BC-FVM** - Biosecurity Commission of FVM
- **BSO** - Biosecurity Officer

5. RULES OF PROCEDURE AND RESPONSIBILITIES

5.1. Process manager

- FVM staff

5.2. Resources

- Properly trained and qualified personnel;
- Existence of necessary equipment.

5.3. Regulations and responsibilities

- Proceed as follows.

5.4 General principles of biosafety and biosecurity applied in FVM

5.4.1. Biosecurity Comision of FVM

- Biosecurity Comision of FVM (BC-FVM) is an interdisciplinary professional advisory group, which aims at biosafety and biosecurity in teaching activities (practical work, clinical and paraclinical activities, workshops, etc.) and which provides recommendations in the field of biosafety and biosecurity to the FVM management.
- Members appointed in BC-FVM has expertise in the use and / or control of many types of biohazardous materials, techniques and procedures.
- BC-FVM recommends biosafety and biosecurity procedures for those operating with live animals, cadavers, animal products and biological samples.
- BC-FVM defines the procedures that allow the assessment and management of biological risks in teaching activities, the assessment of compliance with Biosafety and biosecurity SOPs, as well as the supervision in the prudent use of antibiotics in order to reduce the risk of antibiotic resistance in FVM activities.

5.4.1.1. Mission

- Updating SOPs in relation to the evolution of knowledge in the field and national and international legislation

5.4.1.2. Structure

- BC-FVM members are appointed by the Management Board of FVM and approved by the Council of FVM. The President of BC-FVM is the Dean of FVM or another member of BC-FVM appointed by the Dean of FVM with the position of Vice-President of BC-FVM.
    - The Biosafety and biosecurity commission operates on the basis of the Decision of the Dean of FVM no. 137/27 July 2020.

5.4.1.3. Meetings of the BC-FVM

- The ordinary meetings of BC-FVM are organized at the beginning of each school semester, and the extraordinary meetings in any situation that requires it. Recommendations of the BC-FVM shall be recorded in meeting minutes and shall be transmitted to all interested parties within the FVM.

5.4.2. Biosecurity officer of FVM

5.4.2.1. Nominated

- Biosecurity officer of FVM (OBS) is one of the members of the Management Board of FVM.
- The appointment of the OBS is made by the the Management Board of FVM at the proposal of the FVM Dean and advised by the Council of FVM.
- The OBS can designate a replacement to take over the duties and responsibilities whenever he / she cannot exercise them.

5.4.2.2. Responsibilities

- Monitors the good management of biosafety and biosecurity in the FVM as the official representative of the FVM management.
- Report directly to the Dean of FVM any irregularities and has the authority to stop any activity that does not comply with general and specific biosafety and biosecurity measures.
- Implements and coordinates the FVM standard operating procedures to improve institutional objectives related to biosafety and biosecurity.
- Requests regular review of specific biosafety and biosecurity rules.
- Prepares an annual report on all relevant elements that should be improved in the FVM in the field of biosafety and biosecurity.
- Implements a biosafety and biosecurity education program for all FVM staff.
- Informs and trains staff, students and others about biosafety and biosecurity issues; develops comprehensive educational and information programs on biosafety and biosecurity during the teaching process and clinical research activity.
- Coordinates, controls quality and monitors the provision of biosafety and biosecurity education and training of the FVM staff and students who work or have potential exposure to biological pathogens.
- Analyzes research project proposals and activities involving the use of biohazardous materials and approves or recommends changes to reduce biological hazards.
- Inspects research and teaching areas for compliance with regulations and guidelines on the use, handling and disposal of potential biological risks.
- Monitors all FVM teaching and research activities involving the use of hazardous biological materials.
- Supervises any transfer of biotic risk agent to and from faculty laboratories.

- Coordinates the investigation of all biosafety and biosecurity accidents that occur in FVM and develops corrective action plans.
- Serves as the main source of expertise for FVM in terms of equipment, facilities and appropriate working practices for the protection of laboratories, staff and the environment against any biohazardous material.
- Provides technical guidance to staff involved in the development of research projects and companies or individuals involved in the design and maintenance of equipment and materials for biosafety and biosecurity in the facilities of FVM.
- Participate in meetings of various committees and working groups, such as BC-FVM and the Commission of Ethics of FVM; he / she actively participates in external meetings and organizations and liaises with counterparts from other similar institutions.
- Evaluates the human and logistical resources necessary to achieve the objectives mentioned above, in collaboration with the relevant departments of FVM and UASVM.
- Performs various work-related tasks as assigned.

5.4.3. General biosafety and biosecurity rules for FVM personal

5.4.3.1 Hand hygiene

- **Hand hygiene should be done in the following situations:**
  - Before and after handling each patient;
  - After any contact with contaminated blood, body fluids, secretions, excretions and objects, whether or not gloves have been worn;
  - Immediately after removing the gloves;
  - Between different procedures in the same patient, to prevent cross-contamination of different parts of the body;
  - After handling samples or laboratory cultures;
  - After cleaning cages, paddocks, tables or any contaminated surface;
  - Before meals, breaks, smoking or leaving work at the end of the working day;
  - Before and after the use of toilets (toilets);
- **Recommended hand washing technique:**
  - Wet hands and forearms with warm water;
  - Put ~ 3-5 ml (1-2 complete pumps) of soap in the palm of your hand;
  - Strongly rub each face of the hands beyond the wrist for 10-30 seconds, rub each finger individually and between the fingers, under the rings and nails;
  - Rinse your hands under running hot water until all soap residue is removed;
  - Dry your hands with a disposable paper towel or in a hot air dryer.
- **Recommended technique for using a hand sanitizer:**
  - Pour an appropriate amount of disinfectant into the palm of your hand;

- Rub the disinfectant with the fingertips of the opposite hand, then spread it all over the hand;
- Repeat the procedure with the opposite hand;
- Rub both hands until dry, without rinsing.

♦ If it is not possible to wash your hands immediately, wet wipes with alcohol or other sanitizing products can be used until access to hot water and soap.

♦ FVM staff and students working directly with animals or handling biological samples are encouraged to keep their nails short and not wear jewelry on their fingers or hands.

♦ All lesions on the skin of the hands and forearms should be covered with a waterproof bandage.

5.4.3.2. The protective equipment and street clothes higiene

♦ **Street clothing and footwear**

Street clothing and footwear (capes, jackets, coats, boots, etc.) should not be introduced / stored in laboratories or in spaces where clinical activities are carried out. They should be stored in cupboards when possible. Especially in winter, it is recommended to change shoes.

♦ **Lab coat, overalls and uniforms for practical works / farm / clinic**

Lab coat, overalls and uniforms for practical works / farm / clinic are the first barrier of individual protection against contamination, but in case of increased risk of contact with contaminated liquids, splashing or soaking with blood or other secretions and excretions, they should in turn be protected with waterproof aprons or capes. Lab coat and overalls should be changed whenever they become visibly dirty or contaminated and at the end of each day. Lab coat should only be used in laboratories, not in clinical activities.

Overalls are recommended for activities carried out in animal farms or rural clinic and when visiting several animal farms must be exchanged between properties.

Uniforms for clinical activities should not be worn outside the clinic. Staff should be aware that taking dirty uniforms home for washing could transfer pathogens from the clinic to the home. If uniforms are brought home, they should be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry. Uniforms should be washed on site in warm water with detergent, along with other dirty laundry resulting from clinical activities. Large clinics should have several washing machines, which should be used separately for washing uniforms and for washing laundry from animals (blankets, blankets, rugs, etc.). Clinical uniforms should be washed at the end of each day and whenever they become visibly dirty.

Uniforms specially designed for this activity must always be worn for surgery (disposable sterile overalls/coveralls/uniforms). These uniforms should not be worn during other procedures or during patient handling.

♦ **Clinical footwear**

To avoid injury, it is recommended to wear closed shoes, which reduce the risk of injury from sharp objects, scratches caused by animals and to protect the feet from contact with potentially infectious materials such as feces, urine, secretions, excretions and other biological substances.

In order to prevent the spread of biohazardous materials from contaminated floors to other areas of the clinic, disposable footwear or footwear protections are required. These may be necessary for staff when patients with infectious diseases are kept in boxes or paddocks directly on the floor or if they may contaminate the floor (animals with severe diarrhea). Specially designated footwear should also be used around stables for horses or other animals known to carry infectious agents, such as *Salmonella*. Disposable footwear must be removed when leaving the contaminated area and disposed of in containers intended for this type of waste or stored in the contaminated area until it is collected in special garbage bags.

♦ **Footwear for visits to animal farms**

Washable rubber boots are recommended when visiting the field. Boots can be involved in the transmission of pathogens from one farm to another and can be secondary sources of transmission of zoonoses to humans. To prevent these events, before leaving the visited unit, the boots should be cleaned with water and vigorous brushing until the complete removal of visible contaminants (mud, feces, blood and other organic matter) and decontaminated with a suitable biocide.

♦ **Other personal protective equipment**

The following standard protection measures shall apply to all clinical activities and to each contact with animals, their breeding environment and the biological samples collected from them:

- proper hand washing;
- wound coverage;
- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
- protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
- protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public. Protective clothing should be worn whenever there may be contact with an animal or when working in a clinic (including cleaning).

The size of the protective equipment must be appropriate to the size of the personnel.

Clients should wear the same protective equipment as veterinarians if they request access to clinics where there is a risk of infection.

♦ **The stages of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.

When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.4.3.3. Securing sharp objects

- **The basic principles of safety when handling sharp objects are:**
  - The person who generates the sharp objects is responsible for their safe disposal;
  - Sharp objects are not passed from hand to hand;
  - Sharp containers are replaced when full (not recycled);
  - Children and animals must not have access to containers for sharp objects;
  - Sharp containers are not made available to animals.

In veterinary medical practice, among the most common accidents are punctures with syringe needles, following improperly performed injections. The utmost care must be taken to reinsert the needle into the protective cap. If this operation is not necessary, the used needles are thrown directly into the sharp object container, using the device on the lid of the container to detach the needle. As far as possible, the needles should not be removed from the syringe by hand. Also, the caps of the needles are not removed with the help of the teeth.

Sharp containers are the safest and most economical way to collect for the destruction of needles, scalpel blades and other sharp objects and should be placed in each area for animal care. Sharp objects must not be transferred from one container to another. Needle cutters before disposal should not be used as they increase the risk of aerosolization of the contents, which may be harmful to humans.

5.4.3.4. General biosafety and biosecurity and hygiene measures in patient care

- **Biosafety and biosecurity during patient care**

The care of sick animals and the educational process of teaching them to students obviously require much more frequent, longer-lasting contacts with more patients than routine veterinary medical activity. However, it is important to remember that such contacts can contribute to the transmission of infectious and / or zoonotic pathogens. For this reason, in order to limit the risk of nosocomial infections, FVM staff and students should minimize contact with patients (especially if they are not directly responsible for that patient).

If during the clinical training program students perform examinations or attend procedures on several patients, they should be systematically washed and disinfected on the hands between patients, while stethoscopes and other equipment should be wiped regularly with alcohol or disinfectant.

Staff and students who come into contact with suspected / confirmed contagious patients should limit contact with them only to essential maneuvers. Where appropriate, patients should be monitored by observation without physical contact, if possible with the aid of cameras.

In order to reduce the spread of pathogens, staff and students should also minimize, whenever possible, travel between workspaces served by different services in veterinary clinics. For example, when possible, medical staff and students should minimize visits to the surgery department, and staff and students assigned to the isolator should avoid visiting the Intensive Care Unit.

Staff and students should enter paddocks / cages only when necessary and should avoid touching or playing with animals when passing by.

Whenever possible, staff and students should access high biological risk areas only after visiting areas with minimal biological risk.

- **Patient hygiene**

n the FVM, more importance must be given to the accommodation conditions offered to patients. Regular hygiene of the cages and paddocks where patients are hospitalized is a basic activity that contributes to a significant reduction in infectious pressure. Drinking and feeding vessels must be changed and cleaned regularly. Feces must be removed and the floor sanitized as soon as possible after defecation. If patients have urinated inside the building, it should be removed and the floor cleaned and dried as soon as possible. The space of the cages / paddocks must be clean, tidy and neat, without unduly stored medicines or materials, without bedding stored outside the paddock / cage and without the personal belongings of students or FVM staff. Staff and students must order all materials used and properly dispose of all waste, leaving the workspace in proper condition before leaving the premises.

5.4.3.5. General measures for the protection of personnel who sanitize the premises

When performing decontamination operations, use the appropriate protective equipment, represented by overalls / gown / or work uniform, protective mask, visor or goggles, completed in case of risk of splashing with waterproof clothing and boots.

Personnel performing cleaning activities must be trained, have adequate protective equipment and use cleaning and sanitation products in accordance with the product data sheet.

Mechanical cleaning / disinfection should prevent contact of damaged skin and mucous membranes with blood residues or other biological fluids. Skin lesions should be protected with a waterproof bandage.

At the end of the disinfection, the operator removes his protective equipment and washes his hands.

5.4.3.6. Other biosafety and biosecurity and personal hygiene measures

- **Eating and drinking**

Consumption and storage of food and drink in premises intended for the examination, treatment or accommodation of animals is not permitted. Staff and students are also prohibited from eating, drinking or storing food in areas where biological samples are operated, medicines are prepared or stored. This includes the reception, lobbies, operating rooms and examination rooms.

Consumption and storage of food and beverages are allowed in the following places:

- FVM cafeteria;
- Department kitchens;
- Personal offices of technicians and clinicians;
- Outside the clinical departments.

The introduction and storage, accommodation or treatment of animals, biological samples and medicines shall be prohibited in areas where the consumption of food and non-alcoholic beverages is permitted.

Storage of food and beverages is not permitted in any refrigerator / freezer used for the storage of medicines or biological samples.

Microwave ovens used in care areas or laboratories should not be used to heat food.

- **Cafeteria and grocery store**

Staff and students are prohibited from wearing work clothes (eg: lab coat, overalls, boots, stethoscopes, etc.) in the cafeteria and grocery store on FVM premises. The cafeteria staff must ensure that FVM staff and students follow these hygiene rules. Pets are not allowed in the cafeteria.

5.4.4. General rules for biosafety and biosecurity of spaces in FVM

5.4.4.1. Cleaning and disinfection of equipment and work surfaces

Proper cleaning of spaces and equipment significantly reduces the transmission of pathogens with zoonotic risk. All work surfaces and equipment must be cleaned immediately after use or whenever necessary.

The surfaces on which the animals are placed / examined / treated must be made of impermeable and non-porous materials, which can be easily cleaned. Cleaning of these surfaces must precede disinfection, as organic matter reduces the effectiveness of most disinfectants. Dust and aerosols should be avoided during surface cleaning, as they may contain pathogens for humans and animals. Dry surfaces should be moistened before sweeping. The areas to be cleaned must be properly ventilated.

Clean items should be kept separate from dirty items. Protective gloves should be worn when cleaning equipment, animal cages (including items such as food bowls and toys that have been in cages) and surfaces. Equipment cleaning and disinfection operations must take into account their destination and the manufacturer's recommendations. Any equipment that must undergo chemical or thermal sterilization or disinfection procedures must first be cleaned. In order to avoid the production of splashes and aerosols, for all water-resistant objects it is recommended that the cleaning and disinfection steps be performed by immersion in the cleaning / disinfectant solution.

Regular washing of water vessels and drinkers is usually recommended, but for patients with infectious diseases the use of disposable containers may also be considered. Toys or other objects present in cages or paddocks must be discarded or cleaned and disinfected before being given to another patient. To ensure efficacy, disinfectants should be used according to the manufacturers' instructions, taking into account in particular dilution and contact time. Before returning the reusable materials, equipment and instruments, the disposable sharp parts (needles, scalpel blades, etc.) will be removed and thrown in special, puncture-resistant containers.

Do not mix dirty laundry with waste, hay or other bedding, sharp objects or anatomical pieces.

Before returning to the warehouse, the equipment and surgical instruments are cleaned of organic matter, washed and decontaminated.

Before using the disinfectant, large wastes should be removed, avoiding the formation of dust or aerosolization, which could favor the dispersion of pathogens in the environment.

In order to decompose the surface biofilm and remove surface residues that prevent or inhibit the deep disinfection process, it is recommended to clean these areas with water and detergent or soap.

Surfaces cleaned with detergent will be rinsed with plenty of water to remove traces of detergents that could inactivate the disinfectant used.

After complete drying, the surfaces are treated with a disinfectant solution prepared according to the manufacturer's instructions, which is left to act for at least 15 minutes.

Excess disinfectant is removed with water, clean paper towels, mop or squeegee.

The disinfectant should be washed from all surfaces of the cage / paddock or allowed to dry for a sufficient period of time (according to the manufacturer's specifications) before accommodating a new patient.

Multipurpose areas (hospital, examination rooms, examination tables, etc.) where animals are examined or treated should be cleaned and disinfected immediately after use by staff and students responsible for the patient, whether or not the animal has had a contagious disease.

5.4.4.2. Waste disposal

- **Biosafety and biosecurity of sharp waste disposal**

All necessary precautions must be taken to prevent injury to needles, scalpels and other sharp objects. To prevent stinging with syringe needles, it is forbidden to put a cap on used needles in clinical activities. Staff and students should avoid intentionally bending or breaking needles. Sharp objects should be disposed of in dedicated, puncture-resistant containers. Once filled, these puncture-resistant containers should be placed in a 60L yellow container and discarded for neutralization.

- **Biosafety and biosecurity of disposal of other hospital waste**

Waste with an infectious risk must be disposed of in containers present in the ward where those veterinary medical activities were carried out.

Hospital waste from animals without suspicion of infection with zoonotic or infectious pathogens should be disposed of in current waste bags.

Hospital waste from animals suspected of being infected with a zoonotic agent or an extremely infectious pathogen should be disposed of in special yellow containers.

All waste generated in insulators must be disposed of in yellow containers. Biological samples collected from potentially contagious patients must be sealed in water-resistant plastic bags (double packaging) and labeled with appropriate information and risks, before being sent to diagnostic laboratories. Contamination of the outside with plastic bags containing high-risk biological samples must be avoided.

Bandages used on wounds infected with many drug-resistant bacteria (eg MRSA) should be removed under increased biosafety and biosecurity conditions, and bandaging of patients with wounds infected with these bacteria should be performed in poorly circulated areas that can be easily cleaned and disinfected.

Biological samples or any other anatomical piece (feathers, legs, skeleton, etc.) are not allowed to leave the hospital except for medical purposes or to be destroyed.

5.4.4.3. Disinfectant

- **Use of disinfectants**

It is made in accordance with the manufacturer's recommendations and only for the purpose specified on the label. Sanitary alcohol, betadine and chlorhexidine solutions are used when it is probable or necessary to contact the skin or other tissues. Other disinfectants, such as hypochlorite (bleach), phenols, quaternary ammonium compounds, hydrogen peroxide or aldehydes, are only applied to surfaces, equipment or installations.

Disinfectants are effective when applied to clean, non-porous surfaces. Some materials such as raw wood and mud cannot be disinfected or decontaminated by routine procedures. In addition, non-porous surfaces that are dusty with mud, oil stains, biofilms and other biological materials will not be decontaminated effectively.

♦ **Shoe disinfectors**

Footwear disinfectant solutions should be changed by students, technicians or veterinarians every morning or whenever they contain excessive amounts of bedding or dirt.

Trays / mats should be refilled by anyone who notices that they are dry or have a low volume of disinfectant; this is the responsibility of all people working in the access area (staff and students).

Staff and students are required to use the foot trays / mats, or disposable footwear protectors, when they are present on their way to work.

Foot mats do not require complete immersion of the feet, as they are designed to disinfect the soles and sides of shoes. However, the toe and the sides of the shoes are usually wet and for this reason the use of waterproof shoes is recommended.

♦ **Disinfection of instruments and equipment**

To reduce the risk of transmission of pathogens, all instruments and equipment must be properly cleaned and disinfected before storage.

To reduce the risks associated with the use of glass thermometers (breakage, mercury contamination) it is recommended that they not be used in FVM clinics. The use of electronic thermometers is recommended.

Electronic thermometers should be thoroughly cleaned and disinfected after each patient, using alcohol and / or chlorhexidine wipes, or disposable guards will be used. Thermometers dedicated to each patient are used for the spaces where contagious patients are treated.

Endoscopes should be cleaned, then disinfected after each use, with disinfectants based on quaternary ammonium derivatives, only by trained personnel.

Stethoscopes are disinfected daily and whenever necessary with alcoholic hand solutions. In patients at high risk of contagion, it is recommended to use the same stethoscope throughout the hospital stay.

♦ **Disinfectants and detergents usable in FVM**

All authorized biocidal products, detergents and disinfectants for veterinary medicine are accepted for use. The list of these products and their spectrum of activity are presented in Annex 1 of this manual.

Disinfectants used in FVM must take into account their spectrum of antimicrobial action. Detailed information on the antimicrobial action of the different categories of disinfectants is given in Annex 2 of this manual.

Detailed information on the characteristics of the different classes of disinfectants is given in Annex 3 of this manual.

5.4.5. Identification and disruption of pathogen release circuits

5.4.5.1. Risks associated with FVM personnel

FVM personnel must comply with the rules on occupational safety and health and fire prevention and extinguishing applied at USAMV. In this regard, the ban on smoking in the workplace must be respected, and faculty members should not bring their own pets to the FVM, except for medical reasons.

Minor children (under the age of 18) of FVM staff are not allowed to remain unattended in hospital spaces, consulting rooms or any other unit where there is a reported biological risk.

5.4.5.2. Risks associated with FVM visitors

Visitors can spread pathogens in the hospital environment, which is why they should have limited access to the FVM Campus and not have physical contact with other patients.

The guided tours of the public are coordinated by the office of the Dean of FVM and are led by specially trained staff.

FVM staff supervising visitors must inform all members of the group of the dangers associated with zoonotic and nosocomial diseases that they may contact from hospitalized animals.

Visitors are not allowed in the isolation room, in the anesthesia preparation areas, in the emergency rooms and in the operating rooms, except for visitors of veterinarians or scientists, who may receive special advice from the Dean's Office.

Visitors are not allowed to stay in the rooms where veterinary care activities take place.

Smoking and the consumption of food and drink are prohibited during the visit.

Visitors will not have animals during the visit.

Minor children (under the age of 18) who visit FVM must be constantly supervised by an adult.

5.4.5.3. Risks associated with FVM customers

Clients must be constantly monitored during their presence on the FVM Campus.

Customers have unlimited access to the waiting rooms, to the bathrooms, to the restaurant and to the store inside the FVM Campus.

Client access to areas within the FVM Clinics other than the reception room and waiting areas is restricted. Customers can only access other areas accompanied by FVM staff or students.

Client access to patient care rooms may be restricted whenever necessary to reduce the risks associated with the spread of zoonotic or nosocomial infections. In addition, attending veterinarians may, at their discretion, exclude clients from the patient in the care area for safety reasons and whenever there is a risk of disrupting the work of veterinary staff.

It is up to the attending veterinarian to accept the clients next to the patients, unattended by a student or another person from FVM. It is forbidden for owners to remain unattended in animal accommodation and other areas where this is expressly stated. Customers should be warned that touching animals other than their own is not permitted.

Clients are not allowed to visit patients staying in the isolator. Patient access will be granted exceptionally only in case of euthanasia or agony and in compliance with biosafety and biosecurity measures, as implemented.

Customers must always adhere to policies on preventive measures.

Visiting hours are limited to specific periods determined by the specific schedule of each section of the clinics, unless the attending physician expressly allows it.

FVM staff and students responsible for patient care are required to instruct clients on the dangers associated with contact with zoonotic and nosocomial diseases associated with the hospitalization of contagious animals.

Minor customers (under the age of 18) are not allowed to touch animals other than those they own, they must be warned, whenever possible, about the risks of contacting a zoonotic or nosocomial disease and / or personal injury. The attending physician may decide to remove minors from the consultation and treatment rooms whenever he considers that their safety and the tranquility of the medical act are endangered.

5.4.5.4. Risks associated with pets other than FVM patients

Access to pets other than those specified in this manual is not permitted, as follows:

- patients;
- blood donor dogs and cats;
- subjects enrolled in approved research projects;
- pets used in approved teaching activities.

Contact between healthy and sick animals should be avoided and the animals concerned should be housed / housed in different units.

Pets are not allowed in offices or classrooms unless they are used in teaching activities.

5.4.5.5. Identification of the risks of transmission of pathogens

Pathogens can be spread from animal to animal, from animal to human or even from human to animal orally, by inhalation, by contact with the nasal or ocular mucosa, and by contact with secondary sources of infection or other vectors.

♦ **Respiratory transmission**

Respiratory transmission is achieved by inhaling contaminated aerosol particles. For most pathogens, the survival time in aerosols is short, so the efficiency of transmission in this way is mainly influenced by the direct exposure of humans and other animals to the source of infection. The shorter the distance between the human and the infected animal, the greater the chances of contamination. In veterinary hospitals and clinics, respiratory transmission may occur due to close contact between animals and / or humans.

Pathogens may be recently dispersed in the atmosphere (for example, following the sneezing of a cat infected with a feline respiratory virus), may be re-dispersed by the process of cleaning with pressurized water in cages / paddocks or by dust particles raised by air currents (for example: Coxiella burnetti). Temperature, relative humidity and ventilation play an important role in the respiratory transmission of pathogens.

♦ **Digestive transmission**

Digestive transmission involves ingestion of pathogens. Transmission through the digestive tract can also be achieved by initial inhalation of contaminated aerosols and subsequent swallowing of contaminated material.
Potentially contaminated sources are bowls of food and water and any other objects that an animal may ingest or lick. Feed and water contaminated with feces or urine are frequently responsible for digestive contamination.
For humans, most likely transmission through the digestive tract will be through contaminated hands. That is why hand hygiene is one of the most important measures to prevent the transmission of pathogens through the digestive tract to those who come in direct and indirect contact with infected animals.
Proper handling and segregation of patients with diarrhea, as well as cleaning and sterilization of food and water are necessary measures to control the spread of microorganisms through the digestive tract.

- **Transmission by direct and indirect contact**

Transmission by direct contact requires that an animal or person come into direct contact with another infected animal or person.
Transmission by indirect contact takes place through contact with surfaces / materials contaminated with biological fluids, such as: blood, saliva, nasal secretions, genitourinary secretions, feces, etc.
The likelihood that inpatients will be infected with contagious pathogens is high. Therefore, it is also very likely that all surfaces of the shelters where patients are housed will be contaminated. Segregation of infected animals and minimizing contact with them are two key measures to reduce the risk of transmission through direct or indirect contact.

- **Transmission through secondary sources of infection**

Secondary sources of infection serve as intermediates in the cycles of transmission of pathogens from the primary source to humans and other susceptible animals. Any biotic and abiotic object can be a secondary source of infection, including caregivers. For example, door handles, keyboards, telephones, clothing, thermometers, stethoscopes, hoses, brushes, shovels, etc. they may be contaminated and transmit the pathogen to other animals or humans.
The main measures to prevent the transmission of pathogens through secondary sources are: proper cleaning and disinfection, proper use of personal protective equipment for examination and care of patients, use of dedicated equipment for each infectious patient, and identification and separation of sick animals.
Whenever possible, animals showing clinical signs of infectious disease should be handled and treated after clinically healthy patients.

- **Transmission through vectors**

Vector transmission occurs when an insect or arthropod picks up a pathogen from an animal and transmits it to another. For example, heartworm disease and West Nile virus are vector-borne pathogens.
The most common biological vectors are fleas, ticks, flies and mosquitoes.
The most effective means of preventing vector transmission is to eliminate or reduce the insect population, or at least, to avoid exposing animals to vectors.

- **Zoonoses**

Veterinarians and staff who come into frequent contact with animals are at increased risk of contracting a zoonotic infectious agent.

In case of suspicion or confirmation of exposure to a zoonotic agent, clients, the attending veterinarian, FVM staff, students and other persons who have come in contact, must be identified and recorded by the Head of FVM Clinics and reported to FVM management.

Anyone suspected or confirmed of an occupational infection should seek medical attention immediately after notifying a responsible person, preferably the attending veterinarian, who has informed you of the appropriate hierarchical structures.

The Office of Occupational Safety - PSI should be informed for further referral to an occupational physician.

FVM staff and students, as well as friends and family members who are at high risk of contacting a potential zoonotic infectious agent should contact their family doctor.

♦ **Special risks of contact with infectious diseases**

Anyone whose immune system is compromised is at a higher risk for zoonoses. In addition to immunosuppression associated with disease or treatment with certain drugs, the immune status may also be influenced by other physiological factors, such as age (children under 5 years and the elderly) or pregnancy in women. What is the most severe immunosuppression caused by HIV / AIDS. Other conditions that can compromise or disrupt immune function are diabetes, alcoholism, cirrhosis, malnutrition and autoimmune diseases.

Immunosuppression may also be induced by radiotherapy, chemotherapy, long-term corticosteroid therapy, or immunosuppressive therapy associated with organ transplantation, medical device implants, splenectomy, or long-term hemodialysis.

Before treating any patient, all staff, including students, should inform their supervisor of any special health problems, such as pregnancy and therapeutic immunosuppression, that may increase the risk of infection or the severity of the clinical course associated with infection with pathogens. zoonotic.

All discussions will be confidential; however, communication between staff about the situation may be necessary to implement appropriate precautions and / or to adapt routine clinical or didactic procedures in the hospital.

5.5. Biosafety and biosecurity of medicines

5.5.1. Storage and access

Medicines should be stored in optimal conditions, in accordance with the legal provisions in force and the manufacturers' recommendations, at the appropriate temperature, in the dark, in a clean environment, without variations in temperature and / or humidity.

The organization of medicines is done in classes and alphabetically. Opened medicine vials must be physically separated from the sealed ones (the stock of vaccines must be kept in another room or cupboard).

Opioid narcotics, ketamine and products used for euthanasia must be stored in a secure room or in a safe to which only authorized veterinary medical personnel will have access.

5.5.2. Validity

The opening or breaking date of the sterility seal should be clearly labeled on drugs, including liquids, with a waterproof marker. The drug should be discarded 24 hours after opening or earlier, if specified on the label.

5.5.3. Medication preparation

The preparation of medicines must be carried out by or under the direct supervision of veterinarians. Contamination of medicines with other medicines or residues must be prevented during preparation. For parenteral medication, the rubber stoppers of the vials should be wiped with alcohol before each puncture. New (sterile) disposable syringes and needles will be used in the preparation of medicines, which will not be reused for the same patient, unless they are intended for oral administration, and only after they have been rinsed and cleaned. After preparation of the drugs, a new needle will be used for injection.

The preparation of toxic or dangerous medicines must be carried out safely for the operator, using appropriate personal protective equipment (depending on the type of medicine: gloves, goggles, mask, hood, etc.). The number of people assisting in the preparation of these drugs should be kept to a minimum, all participants being properly equipped.

Medicines with a short period of stability (eg sodium penicillin, ampicillin) should be prepared shortly before administration.

If not administered immediately after preparation, the name of the medicine with a water-resistant marker must be clearly stated on each syringe.

5.5.4. Return of medicines

The remaining medicines, which cannot be returned to the pharmacy, must be disposed of in yellow containers.

<u>5.6. Biosafety and biosecurity principles applied in clinical activities in FVM</u>

5.6.1. Biosafety and biosecurity in equine clinical activities – SOP

5.6.1.1. Protective equipment

- **Overalls and uniforms for hospital / farm / clinical activities**

Overalls are recommended for activities performed in animal farms or rural clinic, and when visiting several animal farms, they must be exchanged between properties.

In case of increased risk of contact with contaminated liquids, splashing or soaking with blood or other secretions and excretions, clinic / farm overalls should be protected with waterproof aprons or capes. Overalls should be changed whenever they become visibly dirty or contaminated and at the end of each day.

Uniforms for clinical activities should not be worn outside the workspace (hospital/farm/clinic).

Staff should be aware that washing dirty uniforms at home could transfer pathogens to the home.

If uniforms are brought home, they should be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.

Uniforms should be washed at work, in warm water with detergent, along with other dirty laundry resulting from clinical activities.

Large clinics should have several washing machines, which should be used separately for washing uniforms and for washing laundry from animals (blankets, blankets, rugs, etc.). Clinical uniforms should be washed at the end of each day and whenever they become visibly dirty.

Uniforms specially designed for this activity must always be worn for surgery (disposable sterile overall/ coverall/uniforms). These uniforms should not be worn during other procedures or during patient handling.

♦ **Footwear for the equine clinic**

To avoid injury, it is recommended to wear closed-toe shoes (for example, washable rubber boots with a metal toe) that reduce the risk of personal injury, animal scratches and to protect the feet from contact with potentially infectious materials, such as feces, urine, secretions, excretions and other biological substances.

To prevent the spread of biohazardous materials from contaminated floors to other areas of the clinic, disposable footwear or footwear protections are required.

These may be necessary for staff when patients with infectious diseases may contaminate the floor (for example: animals with severe diarrhea).

Disposable footwear should be removed when leaving the contaminated area and disposed of in containers intended for this type of waste or stored in the contaminated area until it is collected in special garbage bags.

♦ **Footwear for visits to animal farms**

Washable rubber boots are recommended for field visits.

Boots can be involved in the transmission of pathogens from one farm to another and can be secondary sources of transmission of zoonoses to humans.

To prevent these events, before leaving the visited unit, the boots should be cleaned with water and vigorous brushing until the complete removal of visible contaminants (mud, feces, blood and other organic matter) and decontaminated with a suitable biocide.

♦ **Other personal protective equipment**

The following standard protective measures shall be applied in all clinical activities and whenever contact with animals, their breeding environment and the biological samples collected from them are applied:

- proper hand washing;
- wound coverage;
- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
- protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
- protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public.
Protective clothing should be worn whenever there may be contact with an animal or when working in a clinic (including cleaning).
The size of the protective equipment must be appropriate to the size of the personnel.
Clients should wear the same protective equipment as veterinarians if they request access to clinics where there is a risk of infection.

♦ **Stages of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.
When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.6.1.2 Hygiene of instruments, equipment and spaces

General cleaning and disinfection protocol

Whenever disinfectants are used, gloves and proper clothing must be worn. When performing disinfection, if there is a risk of splashing, additional protective equipment (mask, face visor, goggles, waterproof clothing and boots) should be worn.
All bedding and faeces must be removed before disinfection. Dirty contaminants and urine significantly reduce the effectiveness of most disinfectants. If washing with a hose, care must be taken to minimize the possibility of aerosolization of pathogens.
Wash the paddock, including walls, doors, watering can, with water and detergent or soap; mechanical rubbing or scraping is always required to dislodge residues that prevent disinfectants. After the mechanical cleaning is completed, in order to prevent the dilution of the disinfectant solutions, the paddle is allowed to drain and dry for a sufficient time.
To remove detergent residues, the cleaned area must be rinsed thoroughly.
In the cleaned and dry paddock, the disinfectant solution is sprayed, including on the walls, doors and drinkers. A 2.5% sodium hydroxide solution may be used, which must remain in contact with the surfaces for 15 minutes, especially if an infectious agent is suspected.
Excess disinfectant should be removed with water. After the end of the period of action, the disinfectant solution must be removed from all surfaces of the paddock and then a new patient can be accommodated in the paddock.
After the disinfection is completed, the staff takes off their protective clothing and washes their hands.
Regardless of the patient's infectious condition, all multi-use areas where animals are examined or treated must be cleaned and disinfected after use by the responsible persons. Cleaning tools must be cleaned and disinfected after use (including handles).

Shoe disinfectors

Footwear disinfectant solutions should be changed every morning by the caregiver.
Disinfectant mats should be cleaned whenever they contain excessive amounts of bedding or dirt and reloaded with disinfectant when dry; this is the responsibility of all people working in the area (students, PhD students, technical staff and clinicians).
Staff and students are required to use the trays / mats for footwear and disposable guards when they are present on their way to work.
Disinfectant solutions can damage shoes if they are not waterproof.

Disinfection protocol for tools and equipment

All instruments, equipment or other objects, including gastric tubes, restraint equipment, thermometers, endoscopes, dressing items, etc. must be cleaned, sterilized or disinfected between uses in different patients.
Materials that are sterilized between uses (surgical instruments and equipment) should be cleaned with soap and water, then disinfected with a 0.5% chlorhexidine solution or equivalent immediately after use. The equipment must then be returned to the warehouse for sterilization.

Stethoscopes

Cleaning: wipe with damp paper.
Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.
Personal stethoscopes may be used in animals in non-contagious areas, but should be regularly cleaned and disinfected (recommendation: at the beginning and end of the day). Immediate cleaning and disinfection is required when the stethoscopes are visibly dirty.
- Individual stethoscopes, owned by FVM, are assigned to each high-risk contagious patient (class 4). They are stored at patients' stands during hospitalization and cleaned, then disinfected after discharge.

Thermometers

Cleaning: wipe or wash with soap to remove raw faeces.
Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.
Glass thermometers are prohibited in FVM to reduce the potential risks associated with exposure to glass and mercury. Electronic thermometers are used instead.
Personal electronic thermometers can be used on animals in non-contagious areas, but must be cleaned and disinfected after each patient or disposable guards will be used.
Probe thermometers used for continuous temperature monitoring (eg anesthesia or intensive care) should be cleaned and disinfected immediately after use.
Immediate cleaning and disinfection of thermometers is mandatory when they are visibly dirty.
Individual thermometers should be assigned to each high-risk contagious patient (class 4)
They are stored at the place of hospitalization of patients throughout the hospitalization period and cleaned, then disinfected after discharge.

Hoof picks

A hoof pick should be assigned to each horse.
Cleaning: soap washing to remove raw material.
Disinfection: soaking in chlorhexidine or other equivalent biocide.

Staff and students should use hoof picks to clean the horse's feet before leaving the paddock.
The hoof pick should be cleaned and disinfected once a week by caregivers.
After use on a horse with bacterial or fungal problems at the hoof level, the hoof pick should be cleaned and disinfected immediately.
Each patient is assigned an individual hoof pick. They are stored in patients' paddocks during hospitalization and cleaned and disinfected after discharge.

Brush
Each horse must be assigned a brush.
Cleaning: washing with soap to remove raw material. Brushes used for a horse with a parasitic skin disease (chorioptic / psoroptic / sarcoptic scabies, pediculosis, etc.) should be treated with an antiparasitic before disinfection; In the case of a patient suffering from a fungal infection, an antifungal should be used before disinfection.
Disinfection: soaking in alcohol or chlorhexidine.
Horses should be brushed regularly by students and staff.
Brushes should be cleaned and disinfected (using alcohol or 0.5% chlorhexidine) once a week and re-used in another patient.
Individual brushes are allocated for each patient at high contagious risk (classes 3 and 4). The brushes are stored in the patients' paddock during hospitalization and then cleaned and disinfected after the patient leaves.
Before and after use on a horse with a dermatological problem (either contagious or potentially infected) brushes should be cleaned and disinfected immediately.

Twitches
Cleaning: washing with soap to remove raw material.
Disinfection: soaking in chlorhexidine or other equivalent product.
Twitches should be washed and disinfected weekly by the technical staff employed.
After use in a class 3 or class 4 patient, the twitch should be cleaned and disinfected immediately.
Other personal instruments and equipment (e.g., haemostats, scissors) may be used in more than one patient, but must be cleaned and disinfected between patients using 0.5% chlorhexidine solution available in the pharmacy and in front of each paddock.

Equine trailer
The technical staff / caretakers will clean the trailer immediately after it has been used and at least once a week.

Outpatient examination spaces
Examination rooms are thoroughly cleaned and disinfected daily by technical staff and after each patient if they are visibly dirty.

Equine hospitalization paddocks

The caretaker cleans the paddocks daily and puts on fresh bedding.
Appropriate clothing should be used in the type of paddling sanitation activity (overalls and protective clothing should be used whenever necessary).
Garbage resulting from the sanitation of these spaces must be stored in the dumpsters in the area specially designed for this purpose. During the transport of the garbage to the storage area, it is prevented to spread it on hallways or alleys. Patients' contact with rubbish bins should be avoided. Dedicated rubbish bins are used for patients at risk of infection (classes 3 and 4).
The cleaning tools used for paddocks in class 1-2 must be cleaned and disinfected once a week. Cleaning tools used for Class 3 and 4 paddocks must be cleaned and disinfected after each use.
Dumpsters / buckets used for ruminants should not be moved to equines or vice versa. The colors should be cleaned daily and disinfected once a week.
General procedure for cleaning a vacant paddock
The paddocks used for non-contagious horses are cleaned and disinfected after each patient.
The paddocks used for contagious horses will be cleaned using the general cleaning and disinfection protocol. The caregiver should empty, clean and disinfect the paddock as soon as possible, but after cleaning the non-contagious paddocks. The paddock is considered a contagious area until disinfection and consequently, no horse is allowed in it before its complete cleaning and disinfection.

5.6.1.3. Patient hygiene

All horses must be housed in clean paddocks. In this sense, the caretakers daily remove the manure and dirty bedding from the paddocks and alleys. If a stand is dirty outside of caregivers' working hours, students and / or clinicians should remove faeces and wet bedding and add clean bedding if necessary.
When a horse leaves the paddock, the person responsible for discharging the patient informs the caregivers that they must clean and disinfect the paddock before a new horse can be housed in it. After doing so, the caregiver informs the responsible person of the completion of the action. In the case of newborns, patient hygiene is of paramount importance and therefore wet feces or bedding should be removed immediately by the participating students or caregivers.
Drinkers and drinking vessels / buckets should be cleaned and disinfected between patients.
Feeding vessels must remain clean throughout the hospitalization of horses and must be cleaned and disinfected between patients. If a horse has not eaten, this should be reported to the clinician and the feed should be removed from the feeding vessel.
Horses should be kept as clean as possible, cared for regularly and have their hooves cleaned; excretions or secretions from the horse should be removed.
The environment around the paddock must be clean, tidy and neat. Medicines and materials should not be left lying, scattered outside the paddock. Staff and students must remove materials used in medical activities and leave the location in its original condition.
If patients defecate outside their paddock (whether inside or outside a building), the manure should be removed immediately. If it is diarrhea, the feces must be removed and the floor cleaned, disinfected and dried. If patients urinate indoors, urine should be removed and the floor cleaned and dried.

5.6.1.4. Biosafety and biosecurity when visiting stud farms / equestrian units

In extramural and EPT teaching activities, FVM students and staff will observe and apply the biosafety and biosecurity rules and measures specific to each unit.

During each activity carried out extramural or as an EPT, the rules in chapters 5.4.2 shall be taken into account and observed. General rules on staff biosafety and biosecurity and 5.4.3. General rules for space biosafety and biosecurity.

5.6.2. Biosafety and biosecurity in clinical activities with large ruminants – SOP

5.6.2.1. Protective equipment

- **Overalls and uniforms for farm / clinic work**

Overalls are recommended for activities performed in animal farms or rural clinic and must be changed between properties when visiting several animal farms.

In case of increased risk of contact with contaminated liquids, splashing or soaking with blood or other secretions and excretions (for example: when performing transrectal examinations), clinic / farm overalls are protected with waterproof aprons or capes. Overalls should be changed whenever they become visibly dirty or contaminated and at the end of each day.

Uniforms for clinical activities should not be worn outside the clinic.

Staff should be aware that washing dirty uniforms at home could transfer pathogens to the home.

If uniforms are brought home, they must be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.

Uniforms should be washed at work in warm water with detergent, along with other dirty laundry resulting from clinical activities.

Large clinics should have several washing machines, which should be used separately for washing uniforms and for washing animal clothes (blankets, blankets, rugs, etc.). Clinical uniforms should be washed at the end of each day and whenever they become visibly dirty.

Uniforms specially designed for this activity must always be worn for surgery. These uniforms should not be worn during other procedures or during patient handling. Outside the operating room, surgical uniforms should be covered with a robe.

- **Shoes for the clinic**

To avoid injury, it is recommended to wear closed-toe shoes (for example, washable rubber boots with a metal toe) that reduce the risk of personal injury, animal scratches and to protect the feet from contact with potentially infectious materials, such as feces, urine, secretions, excretions and other biological substances.

In order to prevent the spread of biohazardous materials from contaminated floors to other areas of the clinic / farm, disposable footwear or footwear guards are required.

These may be necessary for staff when patients with infectious diseases are kept in boxes or paddocks directly on the floor or if they may contaminate the floor (for example: in animals with severe diarrhea).

Disposable footwear should be removed when leaving the contaminated area and disposed of in containers intended for this type of waste or stored in the contaminated area until it is collected in special garbage bags.

♦ **Footwear for visits to animal farms**

Washable rubber boots are recommended for field visits.

Boots can be involved in the transmission of pathogens from one farm to another and can be secondary sources of transmission of zoonoses to humans.

To prevent these events, before leaving the unit visited, the boots should be cleaned with water, brushing vigorously until complete removal of visible contaminants (mud, feces, blood and other organic matter) and decontaminated with a suitable biocide.

♦ **Other personal protective equipment**

The following standard protective measures shall be applied in all clinical activities and whenever contact with animals, their breeding environment and the biological samples collected from them are applied:

- proper hand washing;
- wound coverage;
- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
- protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
- protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public.

Protective clothing should be worn whenever there may be contact with an animal or when working in a clinic / farm (including cleaning).

The size of the protective equipment must be appropriate to the size of the personnel.

Clients should wear the same protective equipment as veterinarians if they request access to clinics where there is a risk of infection.

♦ **Stages of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.

When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.6.2.2. Hygiene of instruments, equipment and spaces

General cleaning and disinfection protocol

Whenever disinfectants are used, gloves and proper clothing must be worn. When performing disinfection, if there is a risk of splashing, additional protective equipment (face mask / visor, goggles, waterproof clothing and boots) should be worn.

All bedding and faeces must be removed before disinfection. Dirty contaminants and urine significantly reduce the effectiveness of most disinfectants. If washing with a hose, care must be taken to minimize the possibility of aerosolization of pathogens.

Wash the paddock, including walls, doors, watering can, with water and detergent or soap; mechanical rubbing or scraping is always required to dislodge residues that prevent disinfectants. After the mechanical cleaning is completed, in order to prevent the dilution of the disinfectant solutions, the paddle is allowed to drain and dry for a sufficient time.

To remove detergent residues, the cleaned area must be rinsed thoroughly.

In the cleaned and dry paddock, the disinfectant solution is sprayed, including on the walls, doors and drinkers. A 2.5% sodium hydroxide solution may be used, which must remain in contact with the surfaces for 15 minutes, especially if an infectious agent is suspected.

Excess disinfectant should be removed with water. After the end of the period of action, the disinfectant solution must be removed from all surfaces of the paddock and subsequently a new patient can be accommodated in the paddock.

After the disinfection is completed, the staff takes off their protective clothing and washes their hands.

All multi-use areas where animals are examined or treated must be cleaned and disinfected after use by responsible persons regardless of the patient's infectious condition. Cleaning tools must be cleaned and disinfected after use (including handles).

Shoe disinfectors

Footwear disinfectant solutions should be changed every morning by the caregiver.

Disinfectant mats should be cleaned whenever they contain excessive amounts of bedding or dirt and reloaded with disinfectant when dry; this is the responsibility of all people working in the area (students, PhD students, technical staff and clinicians).

Staff and students must use the mats each time they encounter them on the road.

Disinfectant solutions can damage shoes if they are not waterproof.

Disinfection protocol for tools and equipment

All instruments, equipment or other objects, including gastric tubes, restraint equipment, thermometers, endoscopes, dressing items, etc. must be cleaned, sterilized or disinfected between uses in different patients.

Materials that are sterilized between uses (surgical instruments and equipment) should be cleaned with soap and water, then disinfected with a 0.5% chlorhexidine solution or equivalent immediately after use. The equipment must then be returned to the warehouse for sterilization.

Stethoscopes

Cleaning: wipe with damp paper.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.

Personal stethoscopes may be used in animals in non-contagious areas, but should be regularly cleaned and disinfected (recommendation: at the beginning and end of the day). Immediate cleaning and disinfection is

required when the stethoscopes are visibly dirty.
- Individual stethoscopes, owned by FVM, are assigned to each high-risk contagious patient (class 4). They are stored at patients' stands during hospitalization and cleaned, then disinfected after discharge.

Thermometers

Cleaning: wipe or wash with soap to remove raw faeces.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.

Glass thermometers are prohibited in FVM to reduce the potential risks associated with exposure to glass and mercury. Electronic thermometers are used instead.

Personal electronic thermometers can be used on animals in non-contagious areas, but must be cleaned and disinfected after each patient.

Probe thermometers used for continuous temperature monitoring (eg anesthesia or intensive care) should be cleaned and disinfected immediately after use.

Immediate cleaning and disinfection of thermometers is mandatory when they are visibly dirty.

Individual thermometers should be assigned to each high-risk contagious patient (class 4)

They are stored at the place of hospitalization of patients throughout the hospitalization period and cleaned, then disinfected after discharge.

Outpatient examination spaces

The examination rooms are thoroughly cleaned and disinfected daily by the technical staff, after each patient and if they are visibly dirty.

Admission paddocks

The caretaker cleans the paddocks daily and puts on fresh bedding.

Appropriate clothing should be used in the type of paddling sanitation activity (overalls and protective clothing should be used whenever necessary).

Garbage resulting from the sanitation of these spaces must be stored in the dumpsters in the area specially designed for this purpose. During the transport of the garbage to the storage area, it is prevented to spread it on hallways or alleys. Patients' contact with rubbish bins should be avoided. Dedicated rubbish bins are used for patients at risk of infection (classes 3 and 4).

The cleaning tools used for paddocks in class 1-2 must be cleaned and disinfected once a week. Cleaning tools used for Class 3 and 4 paddocks must be cleaned and disinfected after each use.

Dumpsters / buckets used for ruminants should not be moved to equines or vice versa. The buckets should be cleaned daily and disinfected once a week.

General procedure for cleaning a vacant paddock

The paddocks used for non-contagious animals are cleaned and disinfected after each patient.

The paddocks used for contagious animals will be cleaned using the general cleaning and disinfection protocol. The caregiver should empty, clean and disinfect the paddock as soon as possible, but after cleaning the non-contagious paddocks. The paddock is considered a contagious area until disinfection and as a consequence, no animal is allowed in it before its complete cleaning and disinfection.

5.6.2.3. Patient hygiene

All animals must be housed in clean paddocks. In this regard, caregivers remove manure and dirty bedding daily from paddocks and alleys. If a stand is dirty outside of caregivers' working hours, students and / or clinicians should remove faeces and wet bedding and add clean bedding if necessary.
When an animal leaves the paddock, the person responsible for discharging the patient informs the caregivers that they must clean and disinfect the paddock before a new animal can be housed in it. After doing so, the caregiver informs the responsible person of the completion of the action. In the case of newborns, patient hygiene is of paramount importance and therefore wet feces or bedding should be disposed of immediately by participating students or caregivers.
Drinkers and drinking vessels / buckets should be cleaned and disinfected between patients.
Feeding vessels must remain clean throughout the hospitalization of cows and must be cleaned and disinfected between patients. If an animal has not eaten, this should be reported to the clinician and the feed should be removed from the feeding vessel.
The animals must be as clean as possible, regularly cared for and have their hooves cleaned; excretions or secretions from the animal must be removed.
The environment around the paddock must be clean, tidy and neat. Medicines and materials should not be left lying, scattered outside the paddock. Staff and students must remove materials used in medical activities and leave the location in its original condition.
If patients defecate outside their paddock (whether inside or outside a building), manure should be removed immediately. If the animal has diarrhea syndrome, the faeces must be removed as soon as possible and the floor cleaned, disinfected and dried. If patients urinate indoors, urine should be removed and the floor cleaned and dried.

5.6.2.4. Biosafety and biosecurity when visiting cattle / buffalo farms

In extramural and EPT teaching activities, FVM students and staff will observe and apply the biosafety and biosecurity rules and measures specific to each unit.
During each activity carried out extramural or as an EPT, the rules in chapters 5.4.2 shall be taken into account and observed. General rules on staff biosafety and biosecurity and 5.4.3. General rules for space biosafety and biosecurity.

5.6.3. Biosafety and biosecurity in clinical activities with small ruminants – SOP

5.6.3.1. Protective equipment

- **Overalls and uniforms for farm / clinic work**

  Overalls are recommended for activities carried out on farms or in a rural clinic and must be changed between properties when visiting several animal farms.
  Clinical / farm overalls should be protected with waterproof aprons or capes in case of increased risk of contact with contaminated liquids, splashing or soaking with blood or other secretions and excretions. Overalls should be changed whenever they become visibly dirty or contaminated and at the end of each day.

Uniforms for clinical activities should not be worn outside the clinic.
Staff should be aware that washing dirty uniforms at home could transfer pathogens to the home.
If uniforms are brought home, they should be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.
Uniforms should be washed at work, in warm water with detergent, along with other dirty laundry resulting from clinical activities.
Large clinics should have several washing machines, which should be used separately for washing uniforms and for washing laundry from animals (blankets, blankets, rugs, etc.). Clinical uniforms should be washed at the end of each day and whenever they become visibly dirty.
Uniforms specially designed for this activity must always be worn for surgery. These uniforms should not be worn during other procedures or during patient handling. Outside the operating room, surgical uniforms should be covered with a robe.

♦ **Shoes for the clinic**

To avoid injury, it is recommended to wear closed-toe shoes (for example, washable rubber boots with a metal toe), which reduce the risk of sharp injuries, animal scratches and to protect the feet from contact with potentially infectious materials, such as feces, urine, secretions, excretions and other biological substances.
In order to prevent the spread of biohazardous materials from contaminated floors to other areas of the clinic / farm, disposable footwear or footwear guards are required.
These may be necessary for staff when patients with infectious diseases are kept in boxes or paddocks directly on the floor or if they may contaminate the floor (for example: in animals with severe diarrhea).
Disposable footwear should be removed when leaving the contaminated area and disposed of in containers intended for this type of waste or stored in the contaminated area until it is collected in special garbage bags.

♦ **Footwear for visits to animal farms**

Washable rubber boots are recommended for field visits.
Boots can be involved in the transmission of pathogens from one farm to another and can be secondary sources of transmission of zoonoses to humans.
To prevent these events, before leaving the visited unit, the boots should be cleaned with water and vigorous brushing until the complete removal of visible contaminants (mud, feces, blood and other organic matter) and decontaminated with a suitable biocide.

♦ **Other personal protective equipment**

The following standard protective measures shall be applied in all clinical activities and whenever contact with animals, their breeding environment and the biological samples collected from them are applied:

• proper hand washing;
• wound coverage;
• use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;

• protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);

• protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public.

Protective clothing should be worn whenever there may be contact with an animal or when working in a clinic / farm (including cleaning).

The size of the protective equipment must be appropriate to the size of the personnel.

Clients should wear the same protective equipment as veterinarians if they request access to clinics where there is a risk of infection.

♦ **Stages of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.

When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.6.3.2. Hygiene of instruments, equipment and spaces

General cleaning and disinfection protocol

Whenever disinfectants are used, gloves and proper clothing must be worn. When performing disinfection, if there is a risk of splashing, additional protective equipment (face mask / visor, goggles, waterproof clothing and boots) should be worn.

All bedding and faeces must be removed before disinfection. Dirty contaminants and urine significantly reduce the effectiveness of most disinfectants. If washing with a hose, care must be taken to minimize the possibility of aerosolization of pathogens.

Wash the paddock, including walls, doors, watering can, with water and detergent or soap; mechanical rubbing or scraping is always required to dislodge residues that prevent disinfectants. After the mechanical cleaning is completed, in order to prevent the dilution of the disinfectant solutions, the paddle is allowed to drain and dry for a sufficient time.

To remove detergent residues, the cleaned area must be rinsed thoroughly.

In the cleaned and dry paddock, the disinfectant solution is sprayed, including on the walls, doors and drinkers. A 2.5% sodium hydroxide solution may be used, which must remain in contact with the surfaces for 15 minutes, especially if an infectious agent is suspected.

Excess disinfectant should be removed with water. After the end of the period of action, the disinfectant solution must be removed from all surfaces of the paddock and subsequently a new patient can be accommodated in the paddock.

After the disinfection is completed, the staff takes off their protective clothing and washes their hands.

All multi-use areas where animals are examined or treated must be cleaned and disinfected after use by responsible persons regardless of the patient's infectious condition. Cleaning tools must be cleaned and disinfected after use (including handles).

Shoe disinfectors

Footwear disinfectant solutions should be changed every morning by the caregiver.

Disinfectant mats should be cleaned whenever they contain excessive amounts of bedding or dirt and reloaded with disinfectant when dry; this is the responsibility of all people working in the area (students, PhD students, technical staff and clinicians).

Staff and students must use the mats each time they encounter them on the road.

Disinfectant solutions can damage shoes if they are not waterproof.

Disinfection protocol for tools and equipment

All instruments, equipment or other objects, including gastric tubes, restraint equipment, thermometers, endoscopes, dressing items, etc. must be cleaned, sterilized or disinfected between uses in different patients.

Materials that are sterilized between uses (surgical instruments and equipment) should be cleaned with soap and water, then disinfected with a 0.5% chlorhexidine solution or equivalent immediately after use. The equipment must then be returned to the warehouse for sterilization.

Stethoscopes

Cleaning: wipe with damp paper.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.

Personal stethoscopes may be used in animals in non-contagious areas, but should be regularly cleaned and disinfected (recommendation: at the beginning and end of the day). Immediate cleaning and disinfection is required when the stethoscopes are visibly dirty.

- Individual stethoscopes, owned by FVM, are assigned to each high-risk contagious patient (class 4). They are stored at patients' stands during hospitalization and cleaned, then disinfected after discharge.

Thermometers

Cleaning: wipe or wash with soap to remove raw faeces.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.

Glass thermometers are prohibited in FVM to reduce the potential risks associated with exposure to glass and mercury. Electronic thermometers are used instead.

Personal electronic thermometers can be used on animals in non-contagious areas, but must be cleaned and disinfected after each patient.

Probe thermometers used for continuous temperature monitoring (eg anesthesia or intensive care) should be cleaned and disinfected immediately after use.

Immediate cleaning and disinfection of thermometers is mandatory when they are visibly dirty.

Individual thermometers should be assigned to each high-risk contagious patient (class 4)

They are stored at the place of hospitalization of patients throughout the hospitalization period and cleaned, then disinfected after discharge.

Outpatient examination spaces

The examination rooms are thoroughly cleaned and disinfected daily by the technical staff, after each patient and if they are visibly dirty.

Admission paddocks

The caretaker cleans the paddocks daily and puts on fresh bedding.

Appropriate clothing should be used in the type of paddling sanitation activity (overalls and protective clothing should be used whenever necessary).

Garbage resulting from the sanitation of these spaces must be stored in the dumpsters in the area specially designed for this purpose. During the transport of the garbage to the storage area, it is prevented to spread it on hallways or alleys. Patients' contact with rubbish bins should be avoided. Dedicated rubbish bins are used for patients at risk of infection (classes 3 and 4).

The cleaning tools used for paddocks in class 1-2 must be cleaned and disinfected once a week. Cleaning tools used for Class 3 and 4 paddocks must be cleaned and disinfected after each use.

General procedure for cleaning a vacant paddock

The paddocks used for non-contagious animals are cleaned and disinfected after each patient.

The paddocks used for contagious animals will be cleaned using the general cleaning and disinfection protocol. The caregiver should empty, clean and disinfect the paddock as soon as possible, but after cleaning the non-contagious paddocks. The paddock is considered a contagious area until disinfection and as a consequence, no animal is allowed in it before its complete cleaning and disinfection.

5.6.3.3. Patient hygiene

All animals must be housed in clean paddocks. In this regard, caregivers remove manure and dirty bedding daily from paddocks and alleys. If a stand is dirty outside of caregivers' working hours, students and / or clinicians should remove faeces and wet bedding and add clean bedding if necessary.

When an animal leaves the paddock, the person responsible for discharging the patient informs the caregivers that they must clean and disinfect the paddock before a new animal can be housed in it. After doing so, the caregiver informs the responsible person of the completion of the action. In the case of newborns, patient hygiene is of paramount importance and therefore wet feces or bedding should be disposed of immediately by participating students or caregivers.

Drinkers and drinking vessels / buckets should be cleaned and disinfected between patients.

Feeding vessels must remain clean throughout the hospitalization of animals and must be cleaned and disinfected between patients. If an animal has not eaten, this should be reported to the clinician and the feed should be removed from the feeding vessel.

The animals must be as clean as possible, regularly cared for and have their hooves cleaned; excretions or secretions from the animal must be removed.

The environment around the paddock must be clean, tidy and neat. Medicines and materials should not be left lying, scattered outside the paddock. Staff and students must remove materials used in medical activities and leave the location in its original condition.

If patients defecate outside their paddock (whether inside or outside a building), manure should be removed immediately. If the animal has diarrhea syndrome, the faeces must be removed as soon as possible and the floor cleaned, disinfected and dried. If patients urinate indoors, urine should be removed and the floor cleaned and dried.

5.6.3.4. Biosafety and biosecurity when visiting sheep and goat farms

In extramural and EPT teaching activities, FVM students and staff will observe and apply the biosafety and biosecurity rules and measures specific to each unit.
During each activity carried out extramural or as an EPT, the rules in chapters 5.4.2 shall be taken into account and observed. General rules on staff biosafety and biosecurity and 5.4.3. General rules for space biosafety and biosecurity.

5.6.4. Biosafety and biosecurity in clinical activities with pigs – SOP

5.6.4.1. Protective equipment

- **Overalls and uniforms for farm / clinic work**

Overalls are recommended for activities carried out on farms or in a rural clinic and must be changed between properties when visiting several animal farms.
Clinical / farm overalls should be protected with waterproof aprons or capes in case of increased risk of contact with contaminated liquids, splashing or soaking with blood or other secretions and excretions. Overalls should be changed whenever they become visibly dirty or contaminated and at the end of each day.
Uniforms for clinical activities should not be worn outside the clinic.
Staff should be aware that washing dirty uniforms at home could transfer pathogens to the home.
If uniforms are brought home, they should be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.
Uniforms should be washed at work, in warm water with detergent, along with other dirty laundry resulting from clinical activities.
Large clinics should have several washing machines, which should be used separately for washing uniforms and for washing laundry from animals (blankets, blankets, rugs, etc.). Clinical uniforms should be washed at the end of each day and whenever they become visibly dirty.
Uniforms specially designed for this activity must always be worn for surgery. These uniforms should not be worn during other procedures or during patient handling. Outside the operating room, surgical uniforms should be covered with a robe.

- **Shoes for the clinic**

To avoid injury, it is recommended to wear closed-toe shoes (for example, washable rubber boots with a metal toe), which reduce the risk of sharp injuries, animal scratches and to protect the feet from contact with potentially infectious materials, such as feces, urine, secretions, excretions and other biological substances.
In order to prevent the spread of biohazardous materials from contaminated floors to other areas of the clinic / farm, disposable footwear or footwear guards are required.

These may be necessary for staff when patients with infectious diseases are kept in boxes or paddocks directly on the floor or if they may contaminate the floor (for example: in animals with severe diarrhea).
Disposable footwear should be removed when leaving the contaminated area and disposed of in containers intended for this type of waste or stored in the contaminated area until it is collected in special garbage bags.

♦ **Footwear for visits to animal farms**

Washable rubber boots are recommended for field visits.
Boots can be involved in the transmission of pathogens from one farm to another and can be secondary sources of transmission of zoonoses to humans.
To prevent these events, before leaving the visited unit, the boots should be cleaned with water and vigorous brushing until the complete removal of visible contaminants (mud, feces, blood and other organic matter) and decontaminated with a suitable biocide.

♦ **Other personal protective equipment**

The following standard protective measures shall be applied in all clinical activities and whenever contact with animals, their breeding environment and the biological samples collected from them are applied:

- proper hand washing;
- wound coverage;
- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
- protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
- protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public.
Protective clothing should be worn whenever there may be contact with an animal or when working in a clinic / farm (including cleaning).
The size of the protective equipment must be appropriate to the size of the personnel.
Clients should wear the same protective equipment as veterinarians if they request access to clinics where there is a risk of infection.

♦ **Stages of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.
When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.6.4.2. Hygiene of instruments, equipment and spaces

General cleaning and disinfection protocol

Whenever disinfectants are used, gloves and proper clothing must be worn. When performing disinfection, if there is a risk of splashing, additional protective equipment (face mask / visor, goggles, waterproof clothing and boots) should be worn.

All bedding and faeces must be removed before disinfection. Dirty contaminants and urine significantly reduce the effectiveness of most disinfectants. If washing with a hose, care must be taken to minimize the possibility of aerosolization of pathogens.

Wash the paddock, including walls, doors, watering can, with water and detergent or soap; mechanical rubbing or scraping is always required to dislodge residues that prevent disinfectants. After the mechanical cleaning is completed, in order to prevent the dilution of the disinfectant solutions, the paddle is allowed to drain and dry for a sufficient time.

To remove detergent residues, the cleaned area must be rinsed thoroughly.

In the cleaned and dry paddock, the disinfectant solution is sprayed, including on the walls, doors and drinkers. A 2.5% sodium hydroxide solution may be used, which must remain in contact with the surfaces for 15 minutes, especially if an infectious agent is suspected.

Excess disinfectant should be removed with water. After the end of the period of action, the disinfectant solution must be removed from all surfaces of the paddock and subsequently a new patient can be accommodated in the paddock.

After the disinfection is completed, the staff takes off their protective clothing and washes their hands.

All multi-use areas where animals are examined or treated must be cleaned and disinfected after use by responsible persons regardless of the patient's infectious condition. Cleaning tools must be cleaned and disinfected after use (including handles).

Shoe disinfectors

Footwear disinfectant solutions should be changed every morning by the caregiver.

Disinfectant mats should be cleaned whenever they contain excessive amounts of bedding or dirt and reloaded with disinfectant when dry; this is the responsibility of all people working in the area (students, PhD students, technical staff and clinicians).

Staff and students must use the mats each time they encounter them on the road.

Disinfectant solutions can damage shoes if they are not waterproof.

Disinfection protocol for tools and equipment

All instruments, equipment or other objects, including gastric tubes, restraint equipment, thermometers, endoscopes, dressing items, etc. must be cleaned, sterilized or disinfected between uses in different patients.

Materials that are sterilized between uses (surgical instruments and equipment) should be cleaned with soap and water, then disinfected with a 0.5% chlorhexidine solution or equivalent immediately after use. The equipment must then be returned to the warehouse for sterilization.

Stethoscopes

Cleaning: wipe with damp paper.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in

the hospital.
Personal stethoscopes may be used in animals in non-contagious areas, but should be regularly cleaned and disinfected (recommendation: at the beginning and end of the day). Immediate cleaning and disinfection is required when the stethoscopes are visibly dirty.
- Individual stethoscopes, owned by FVM, are assigned to each high-risk contagious patient (class 4). They are stored at patients' stands during hospitalization and cleaned, then disinfected after discharge.

Thermometers

Cleaning: wipe or wash with soap to remove raw faeces.
Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.
Glass thermometers are prohibited in FVM to reduce the potential risks associated with exposure to glass and mercury. Electronic thermometers are used instead.
Personal electronic thermometers can be used on animals in non-contagious areas, but must be cleaned and disinfected after each patient.
Probe thermometers used for continuous temperature monitoring (eg anesthesia or intensive care) should be cleaned and disinfected immediately after use.
Immediate cleaning and disinfection of thermometers is mandatory when they are visibly dirty.
Individual thermometers should be assigned to each high-risk contagious patient (class 4)
They are stored at the place of hospitalization of patients throughout the hospitalization period and cleaned, then disinfected after discharge.

Outpatient examination spaces

The examination rooms are thoroughly cleaned and disinfected daily by the technical staff, after each patient and if they are visibly dirty.

Admission paddocks

The caretaker cleans the paddocks daily and puts on fresh bedding.
Appropriate clothing should be used in the type of paddling sanitation activity (overalls and protective clothing should be used whenever necessary).
Garbage resulting from the sanitation of these spaces must be stored in the dumpsters in the area specially designed for this purpose. During the transport of the garbage to the storage area, it is prevented to spread it on hallways or alleys. Patients' contact with rubbish bins should be avoided. Dedicated rubbish bins are used for patients at risk of infection (classes 3 and 4).
The cleaning tools used for paddocks in class 1-2 must be cleaned and disinfected once a week. Cleaning tools used for Class 3 and 4 paddocks must be cleaned and disinfected after each use.

General procedure for cleaning a vacant paddock

The paddocks used for non-contagious animals are cleaned and disinfected after each patient.
The paddocks used for contagious animals will be cleaned using the general cleaning and disinfection protocol. The caregiver should empty, clean and disinfect the paddock as soon as possible, but after cleaning the non-contagious paddocks. The paddock is considered a contagious area until disinfection and as a consequence, no animal is allowed in it before its complete cleaning and disinfection.

5.6.4.3. Patient hygiene

All animals must be housed in clean paddocks. In this regard, caregivers remove manure and dirty bedding daily from paddocks and alleys. If a stand is dirty outside of caregivers' working hours, students and / or clinicians should remove faeces and wet bedding and add clean bedding if necessary.

When an animal leaves the paddock, the person responsible for discharging the patient informs the caregivers that they must clean and disinfect the paddock before a new animal can be housed in it. After doing so, the caregiver informs the responsible person of the completion of the action. In the case of newborns, patient hygiene is of paramount importance and therefore wet feces or bedding should be disposed of immediately by participating students or caregivers.

Drinkers and drinking vessels / buckets should be cleaned and disinfected between patients.

Feeding vessels must remain clean throughout the hospitalization of animals and must be cleaned and disinfected between patients. If an animal has not eaten, this should be reported to the clinician and the feed should be removed from the feeding vessel.

The animals must be as clean as possible, regularly cared for and have their hooves cleaned; excretions or secretions from the animal must be removed.

The environment around the paddock must be clean, tidy and neat. Medicines and materials should not be left lying, scattered outside the paddock. Staff and students must remove materials used in medical activities and leave the location in its original condition.

If patients defecate outside their paddock (whether inside or outside a building), manure should be removed immediately. If the animal has diarrhea syndrome, the faeces must be removed as soon as possible and the floor cleaned, disinfected and dried. If patients urinate indoors, urine should be removed and the floor cleaned and dried.

5.6.4.4. Biosafety and biosecurity when visiting pig farms

În activitățile didactice extramurale și EPT studenții și personalul FVM vor respecta și aplica normele și măsurile de biosecuritate specifice fiecărei unități.

Pe parcursul fiecărei activități desfășurate extramural sau ca EPT, se vor avea în vedere și respecta normele din capitolele 5.4.2. Norme generale de biosecuritate a personalului și 5.4.3. Norme generale de biosecuritate a spațiilor.

5.6.5. Biosafety and biosecurity in clinical activities with birds– SOP

5.6.5.1. Protective equipment

- **Overalls and uniforms for farm / clinic work**

  Overalls are recommended for activities carried out on farms or in a rural clinic and must be changed between properties when visiting several animal farms.

  Clinical / farm overalls should be protected with waterproof aprons or capes in case of increased risk of contact with contaminated liquids, splashing or soaking with blood or other secretions and excretions.

Overalls should be changed whenever they become visibly dirty or contaminated and at the end of each day.
Uniforms for clinical activities should not be worn outside the clinic.
Staff should be aware that washing dirty uniforms at home could transfer pathogens to the home.
If uniforms are brought home, they should be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.
Uniforms should be washed at work, in warm water with detergent, along with other dirty laundry resulting from clinical activities.
Large clinics should have several washing machines, which should be used separately for washing uniforms and for washing laundry from animals (blankets, blankets, rugs, etc.). Clinical uniforms should be washed at the end of each day and whenever they become visibly dirty.
Uniforms specially designed for this activity must always be worn for surgery. These uniforms should not be worn during other procedures or during patient handling. Outside the operating room, surgical uniforms should be covered with a robe.

♦ **Shoes for the clinic**

To avoid injury, it is recommended to wear closed-toe shoes (for example, washable rubber boots with a metal toe), which reduce the risk of sharp injuries, animal scratches and to protect the feet from contact with potentially infectious materials, such as feces, urine, secretions, excretions and other biological substances.
In order to prevent the spread of biohazardous materials from contaminated floors to other areas of the clinic / farm, disposable footwear or footwear guards are required.
These may be necessary for staff when patients with infectious diseases are kept in boxes or paddocks directly on the floor or if they may contaminate the floor (for example: in animals with severe diarrhea).
Disposable footwear should be removed when leaving the contaminated area and disposed of in containers intended for this type of waste or stored in the contaminated area until it is collected in special garbage bags.

♦ **Footwear for visits to animal farms**

Washable rubber boots are recommended for field visits.
Boots can be involved in the transmission of pathogens from one farm to another and can be secondary sources of transmission of zoonoses to humans.
To prevent these events, before leaving the visited unit, the boots should be cleaned with water and vigorous brushing until the complete removal of visible contaminants (mud, feces, blood and other organic matter) and decontaminated with a suitable biocide.

♦ **Other personal protective equipment**

The following standard protective measures shall be applied in all clinical activities and whenever contact with animals, their breeding environment and the biological samples collected from them are applied:

- proper hand washing;
- wound coverage;

• use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
• protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
• protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public.
Protective clothing should be worn whenever there may be contact with an animal or when working in a clinic / farm (including cleaning).
The size of the protective equipment must be appropriate to the size of the personnel.
Clients should wear the same protective equipment as veterinarians if they request access to clinics where there is a risk of infection.

♦ **Stages of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.
When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.6.5.2. Hygiene of instruments, equipment and spaces

General cleaning and disinfection protocol

Whenever disinfectants are used, gloves and proper clothing must be worn. When performing disinfection, if there is a risk of splashing, additional protective equipment (face mask / visor, goggles, waterproof clothing and boots) should be worn.
All bedding and faeces must be removed before disinfection. Dirty contaminants and urine significantly reduce the effectiveness of most disinfectants. If washing with a hose, care must be taken to minimize the possibility of aerosolization of pathogens.
Wash the paddock, including walls, doors, watering can, with water and detergent or soap; mechanical rubbing or scraping is always required to dislodge residues that prevent disinfectants. After the mechanical cleaning is completed, in order to prevent the dilution of the disinfectant solutions, the paddle is allowed to drain and dry for a sufficient time.
To remove detergent residues, the cleaned area must be rinsed thoroughly.
In the cleaned and dry paddock, the disinfectant solution is sprayed, including on the walls, doors and drinkers. A 2.5% sodium hydroxide solution may be used, which must remain in contact with the surfaces for 15 minutes, especially if an infectious agent is suspected.

Excess disinfectant should be removed with water. After the end of the period of action, the disinfectant solution must be removed from all surfaces of the paddock and subsequently a new patient can be accommodated in the paddock.

After the disinfection is completed, the staff takes off their protective clothing and washes their hands.

All multi-use areas where animals are examined or treated must be cleaned and disinfected after use by responsible persons regardless of the patient's infectious condition. Cleaning tools must be cleaned and disinfected after use (including handles).

Shoe disinfectors

Footwear disinfectant solutions should be changed every morning by the caregiver.

Disinfectant mats should be cleaned whenever they contain excessive amounts of bedding or dirt and reloaded with disinfectant when dry; this is the responsibility of all people working in the area (students, PhD students, technical staff and clinicians).

Staff and students must use the mats each time they encounter them on the road.

Disinfectant solutions can damage shoes if they are not waterproof.

Disinfection protocol for tools and equipment

All instruments, equipment or other objects, including gastric tubes, restraint equipment, thermometers, endoscopes, dressing items, etc. must be cleaned, sterilized or disinfected between uses in different patients.

Materials that are sterilized between uses (surgical instruments and equipment) should be cleaned with soap and water, then disinfected with a 0.5% chlorhexidine solution or equivalent immediately after use. The equipment must then be returned to the warehouse for sterilization.

Stethoscopes

Cleaning: wipe with damp paper.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.

Personal stethoscopes may be used in animals in non-contagious areas, but should be regularly cleaned and disinfected (recommendation: at the beginning and end of the day). Immediate cleaning and disinfection is required when the stethoscopes are visibly dirty.

- Individual stethoscopes, owned by FVM, are assigned to each high-risk contagious patient (class 4). They are stored at patients' stands during hospitalization and cleaned, then disinfected after discharge.

Thermometers

Cleaning: wipe or wash with soap to remove raw faeces.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.

Glass thermometers are prohibited in FVM to reduce the potential risks associated with exposure to glass and mercury. Electronic thermometers are used instead.

Personal electronic thermometers can be used on animals in non-contagious areas, but must be cleaned and disinfected after each patient.

Probe thermometers used for continuous temperature monitoring (eg anesthesia or intensive care) should be cleaned and disinfected immediately after use.

Immediate cleaning and disinfection of thermometers is mandatory when they are visibly dirty.

Individual thermometers should be assigned to each high-risk contagious patient (class 4)
They are stored at the place of hospitalization of patients throughout the hospitalization period and cleaned, then disinfected after discharge.

Outpatient examination spaces

The examination rooms are thoroughly cleaned and disinfected daily by the technical staff, after each patient and if they are visibly dirty.

Admission in accommodation spaces

The caretaker cleans the accommodation spaces daily and puts on fresh bedding.
Appropriate clothing should be used in the type of paddling sanitation activity (overalls and protective clothing should be used whenever necessary).
Garbage resulting from the sanitation of these spaces must be stored in the dumpsters in the area specially designed for this purpose. During the transport of the garbage to the storage area, it is prevented to spread it on hallways or alleys. Patients' contact with rubbish bins should be avoided. Dedicated rubbish bins are used for patients at risk of infection (classes 3 and 4).
The cleaning tools used for accommodation spaces in class 1-2 must be cleaned and disinfected once a week. Cleaning tools used for Class 3 and 4 accommodation spaces must be cleaned and disinfected after each use.

General procedure for cleaning a vacant accommodation space

The accommodation spaces used for non-contagious animals are cleaned and disinfected after each patient.
The accommodation spaces used for contagious animals will be cleaned using the general cleaning and disinfection protocol. The caregiver should empty, clean and disinfect the accommodation space as soon as possible, but after cleaning the non-contagious accommodation spaces. The accommodation spaces is considered a contagious area until disinfection and as a consequence, no animal is allowed in it before its complete cleaning and disinfection.

5.6.5.3. Patient hygiene

All animals must be housed in clean cages. In this regard, caregivers remove faeces and dirty bedding daily from cages and alleys. If a stand is dirty outside of caregivers' working hours, students and / or clinicians should remove faeces and wet bedding and add clean bedding if necessary.
When an animal leaves the cage, the person responsible for discharging the patient informs the caregivers that they must clean and disinfect the cage before a new animal can be housed in it. After doing so, the caregiver informs the responsible person of the completion of the action. In the case of newborns, patient hygiene is of paramount importance and therefore wet feces or bedding should be disposed of immediately by participating students or caregivers.
Drinkers and drinking vessels / buckets should be cleaned and disinfected between patients.
Feeding vessels must remain clean throughout the hospitalization of animals and must be cleaned and disinfected between patients. If an animal has not eaten, this should be reported to the clinician and the feed should be removed from the feeding vessel.
The animals must be as clean as possible, excretions or secretions from the animal must be removed.
The environment around the cage must be clean, tidy and neat. Medicines and materials should not be left lying, scattered outside the cage. Staff and students must remove materials used in medical activities and leave the location

in its original condition.
If patients defecate outside their cage (whether inside or outside a building), faeces should be removed immediately. If the animal has diarrhea syndrome, the faeces must be removed as soon as possible and the floor cleaned, disinfected and dried.

5.6.4.4. Biosafety and biosecurity when visiting poultry farms

In extramural and EPT teaching activities, FVM students and staff will observe and apply the biosafety and biosecurity rules and measures specific to each unit.
During each activity carried out extramural or as an EPT, the rules in chapters 5.4.2 shall be taken into account and observed. General rules on staff biosafety and biosecurity and 5.4.3. General rules for space biosafety and biosecurity.

5.6.6. Biosafety and biosecurity in clinical activities with companion carnivores – POS

5.6.6.1. Protective equipment

♦ **Overalls and uniforms for clinic work**

Uniforms for clinical activities should not be worn outside the clinic.
Staff should be aware that washing dirty uniforms at home could transfer pathogens to the home.
If uniforms are brought home, they should be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.
Uniforms should be washed at work, in warm water with detergent, along with other dirty laundry resulting from clinical activities.
Large clinics should have several washing machines, which should be used separately for washing uniforms and for washing laundry from animals (blankets, blankets, rugs, etc.). Clinical uniforms should be washed at the end of each day and whenever they become visibly dirty.
Uniforms specially designed for this activity must always be worn for surgery. These uniforms should not be worn during other procedures or during patient handling. Outside the operating room, surgical uniforms should be covered with a robe.

♦ **Shoes for the clinic**

To avoid injury, it is recommended to wear closed-toe shoes (for example, washable rubber boots with a metal toe), which reduce the risk of sharp injuries, animal scratches and to protect the feet from contact with potentially infectious materials, such as feces, urine, secretions, excretions and other biological substances.
In order to prevent the spread of biohazardous materials from contaminated floors to other areas of the clinic / farm, disposable footwear or footwear guards are required.
These may be necessary for staff when patients with infectious diseases are kept in boxes or paddocks directly on the floor or if they may contaminate the floor (for example: in animals with severe diarrhea).

Disposable footwear should be removed when leaving the contaminated area and disposed of in containers intended for this type of waste or stored in the contaminated area until it is collected in special garbage bags.

♦ **Other personal protective equipment**

The following standard protective measures shall be applied in all clinical activities and whenever contact with animals, their breeding environment and the biological samples collected from them are applied:

- proper hand washing;
- wound coverage;
- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
- protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
- protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public.

Protective clothing should be worn whenever there may be contact with an animal or when working in a clinic (including cleaning).

The size of the protective equipment must be appropriate to the size of the personnel.

Clients should wear the same protective equipment as veterinarians if they request access to clinics where there is a risk of infection.

♦ **Stages of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.

When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.6.6.2. Hygiene of instruments, equipment and spaces

General cleaning and disinfection protocol

Whenever disinfectants are used, gloves and proper clothing must be worn. When performing disinfection, if there is a risk of splashing, additional protective equipment (face mask / visor, goggles, waterproof clothing and boots) should be worn.

All bedding and faeces must be removed before disinfection. Dirty contaminants and urine significantly reduce the effectiveness of most disinfectants. If washing with a hose, care must be taken to minimize the possibility of aerosolization of pathogens.

Wash the paddock, including walls, doors, watering can, with water and detergent or soap; mechanical rubbing or scraping is always required to dislodge residues that prevent disinfectants. After the mechanical cleaning is completed, in order to prevent the dilution of the disinfectant solutions, the paddle is allowed to drain and dry for a sufficient time.

To remove detergent residues, the cleaned area must be rinsed thoroughly.

In the cleaned and dry paddock, the disinfectant solution is sprayed, including on the walls, doors and drinkers. A 2.5% sodium hydroxide solution may be used, which must remain in contact with the surfaces for 15 minutes, especially if an infectious agent is suspected.

Excess disinfectant should be removed with water. After the end of the period of action, the disinfectant solution must be removed from all surfaces of the paddock and subsequently a new patient can be accommodated in the paddock.

After the disinfection is completed, the staff takes off their protective clothing and washes their hands.

All multi-use areas where animals are examined or treated must be cleaned and disinfected after use by responsible persons regardless of the patient's infectious condition. Cleaning tools must be cleaned and disinfected after use (including handles).

Shoe disinfectors

Footwear disinfectant solutions should be changed every morning by the caregiver.

Disinfectant mats should be cleaned whenever they contain excessive amounts of bedding or dirt and reloaded with disinfectant when dry; this is the responsibility of all people working in the area (students, PhD students, technical staff and clinicians).

Staff and students must use the mats each time they encounter them on the road.

Disinfectant solutions can damage shoes if they are not waterproof.

Disinfection protocol for tools and equipment

All instruments, equipment or other objects, including gastric tubes, restraint equipment, thermometers, endoscopes, dressing items, etc. must be cleaned, sterilized or disinfected between uses in different patients.

Materials that are sterilized between uses (surgical instruments and equipment) should be cleaned with soap and water, then disinfected with a 0.5% chlorhexidine solution or equivalent immediately after use. The equipment must then be returned to the warehouse for sterilization.

Stethoscopes

Cleaning: wipe with damp paper.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.

Personal stethoscopes may be used in animals in non-contagious areas, but should be regularly cleaned and disinfected (recommendation: at the beginning and end of the day). Immediate cleaning and disinfection is required when the stethoscopes are visibly dirty.

- Individual stethoscopes, owned by FVM, are assigned to each high-risk contagious patient (class 4). They are stored at patients' stands during hospitalization and cleaned, then disinfected after discharge.

Thermometers

Cleaning: wipe or wash with soap to remove raw faeces.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in

the hospital.
Glass thermometers are prohibited in FVM to reduce the potential risks associated with exposure to glass and mercury. Electronic thermometers are used instead.
Personal electronic thermometers can be used on animals in non-contagious areas, but must be cleaned and disinfected after each patient.
Probe thermometers used for continuous temperature monitoring (eg anesthesia or intensive care) should be cleaned and disinfected immediately after use.
Immediate cleaning and disinfection of thermometers is mandatory when they are visibly dirty.
Individual thermometers should be assigned to each high-risk contagious patient (class 4)
They are stored at the place of hospitalization of patients throughout the hospitalization period and cleaned, then disinfected after discharge.

Outpatient examination spaces

The examination rooms are thoroughly cleaned and disinfected daily by the technical staff, after each patient and if they are visibly dirty.

Admission in accommodation spaces

The caretaker cleans the accommodation spaces daily and puts on fresh bedding.
Appropriate clothing should be used in the type of paddling sanitation activity (overalls and protective clothing should be used whenever necessary).
Garbage resulting from the sanitation of these spaces must be stored in the dumpsters in the area specially designed for this purpose. During the transport of the garbage to the storage area, it is prevented to spread it on hallways or alleys. Patients' contact with rubbish bins should be avoided. Dedicated rubbish bins are used for patients at risk of infection (classes 3 and 4).
The cleaning tools used for accommodation spaces in class 1-2 must be cleaned and disinfected once a week. Cleaning tools used for Class 3 and 4 accommodation spaces must be cleaned and disinfected after each use.

General procedure for cleaning a vacant accommodation space

The accommodation spaces used for non-contagious animals are cleaned and disinfected after each patient.
The accommodation spaces used for contagious animals will be cleaned using the general cleaning and disinfection protocol. The caregiver should empty, clean and disinfect the accommodation space as soon as possible, but after cleaning the non-contagious accommodation spaces. The accommodation spaces is considered a contagious area until disinfection and as a consequence, no animal is allowed in it before its complete cleaning and disinfection.

5.6.6.3. Patient hygiene

All animals must be housed in clean cages/rooms. In this regard, caregivers remove faeces and dirty bedding daily from cages / rooms and alleys. If a stand is dirty outside of caregivers' working hours, students and / or clinicians should remove faeces and wet bedding and add clean bedding if necessary.
When an animal leaves the cage/room, the person responsible for discharging the patient informs the caregivers that they must clean and disinfect the cage/room before a new animal can be housed in it. After doing so, the caregiver informs the responsible person of the completion of the action. In the case of newborns, patient hygiene is of paramount importance and therefore wet feces or bedding should be disposed of immediately by participating

students or caregivers.

Drinkers and drinking vessels / buckets should be cleaned and disinfected between patients.

Feeding vessels must remain clean throughout the hospitalization of animals and must be cleaned and disinfected between patients. If an animal has not eaten, this should be reported to the clinician and the feed should be removed from the feeding vessel.

The animals must be as clean as possible, excretions or secretions from the animal must be removed.

The environment around the cage/room must be clean, tidy and neat. Medicines and materials should not be left lying, scattered outside the cage/room. Staff and students must remove materials used in medical activities and leave the location in its original condition.

If patients defecate outside their cage/room (whether inside or outside a building), faeces should be removed immediately. If the animal has diarrhea syndrome, the faeces must be removed as soon as possible and the floor cleaned, disinfected and dried.

5.6.6.4. Biosafety and biosecurity in extramural and EPT teaching activities

In extramural and EPT teaching activities, FVM students and staff will observe and apply the biosafety and biosecurity rules and measures specific to each unit.

During each activity carried out extramural or as an EPT, the rules in chapters 5.4.2 shall be taken into account and observed. General rules on staff biosafety and biosecurity and 5.4.3. General rules for space biosafety and biosecurity.

5.6.7. Biosafety and biosecurity in clinical activities with other companion animals – POS

5.6.7.1. Protective equipment

- **Overalls and uniforms for clinic work**

Uniforms for clinical activities should not be worn outside the clinic.

Staff should be aware that washing dirty uniforms at home could transfer pathogens to the home.

If uniforms are brought home, they should be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.

Uniforms should be washed at work, in warm water with detergent, along with other dirty laundry resulting from clinical activities.

Large clinics should have several washing machines, which should be used separately for washing uniforms and for washing laundry from animals (blankets, blankets, rugs, etc.). Clinical uniforms should be washed at the end of each day and whenever they become visibly dirty.

Uniforms specially designed for this activity must always be worn for surgery. These uniforms should not be worn during other procedures or during patient handling. Outside the operating room, surgical uniforms should be covered with a robe.

- **Shoes for the clinic**

To avoid injury, it is recommended to wear closed-toe shoes (for example, washable rubber boots with a metal toe), which reduce the risk of sharp injuries, animal scratches and to protect the feet from contact with potentially infectious materials, such as feces, urine, secretions, excretions and other biological substances.

In order to prevent the spread of biohazardous materials from contaminated floors to other areas of the clinic / farm, disposable footwear or footwear guards are required.

These may be necessary for staff when patients with infectious diseases are kept in boxes or paddocks directly on the floor or if they may contaminate the floor (for example: in animals with severe diarrhea).

Disposable footwear should be removed when leaving the contaminated area and disposed of in containers intended for this type of waste or stored in the contaminated area until it is collected in special garbage bags.

♦ **Other personal protective equipment**

The following standard protective measures shall be applied in all clinical activities and whenever contact with animals, their breeding environment and the biological samples collected from them are applied:

• proper hand washing;
• wound coverage;
• use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
• protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
• protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public.

Protective clothing should be worn whenever there may be contact with an animal or when working in a clinic (including cleaning).

The size of the protective equipment must be appropriate to the size of the personnel.

Clients should wear the same protective equipment as veterinarians if they request access to clinics where there is a risk of infection.

♦ **Stages of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.

When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.6.7.2. Hygiene of instruments, equipment and spaces

General cleaning and disinfection protocol

Whenever disinfectants are used, gloves and proper clothing must be worn. When performing disinfection, if there is a risk of splashing, additional protective equipment (face mask / visor, goggles, waterproof clothing and boots) should be worn.

All bedding and faeces must be removed before disinfection. Dirty contaminants and urine significantly reduce the effectiveness of most disinfectants. If washing with a hose, care must be taken to minimize the possibility of aerosolization of pathogens.

Wash the paddock, including walls, doors, watering can, with water and detergent or soap; mechanical rubbing or scraping is always required to dislodge residues that prevent disinfectants. After the mechanical cleaning is completed, in order to prevent the dilution of the disinfectant solutions, the paddle is allowed to drain and dry for a sufficient time.

To remove detergent residues, the cleaned area must be rinsed thoroughly.

In the cleaned and dry paddock, the disinfectant solution is sprayed, including on the walls, doors and drinkers. A 2.5% sodium hydroxide solution may be used, which must remain in contact with the surfaces for 15 minutes, especially if an infectious agent is suspected.

Excess disinfectant should be removed with water. After the end of the period of action, the disinfectant solution must be removed from all surfaces of the paddock and subsequently a new patient can be accommodated in the paddock.

After the disinfection is completed, the staff takes off their protective clothing and washes their hands.

All multi-use areas where animals are examined or treated must be cleaned and disinfected after use by responsible persons regardless of the patient's infectious condition. Cleaning tools must be cleaned and disinfected after use (including handles).

Shoe disinfectors

Footwear disinfectant solutions should be changed every morning by the caregiver.

Disinfectant mats should be cleaned whenever they contain excessive amounts of bedding or dirt and reloaded with disinfectant when dry; this is the responsibility of all people working in the area (students, PhD students, technical staff and clinicians).

Staff and students must use the mats each time they encounter them on the road.

Disinfectant solutions can damage shoes if they are not waterproof.

Disinfection protocol for tools and equipment

All instruments, equipment or other objects, including gastric tubes, restraint equipment, thermometers, endoscopes, dressing items, etc. must be cleaned, sterilized or disinfected between uses in different patients.

Materials that are sterilized between uses (surgical instruments and equipment) should be cleaned with soap and water, then disinfected with a 0.5% chlorhexidine solution or equivalent immediately after use. The equipment must then be returned to the warehouse for sterilization.

Stethoscopes

Cleaning: wipe with damp paper.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in

the hospital.

Personal stethoscopes may be used in animals in non-contagious areas, but should be regularly cleaned and disinfected (recommendation: at the beginning and end of the day). Immediate cleaning and disinfection is required when the stethoscopes are visibly dirty.

- Individual stethoscopes, owned by FVM, are assigned to each high-risk contagious patient (class 4). They are stored at patients' stands during hospitalization and cleaned, then disinfected after discharge.

Thermometers

Cleaning: wipe or wash with soap to remove raw faeces.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.

Glass thermometers are prohibited in FVM to reduce the potential risks associated with exposure to glass and mercury. Electronic thermometers are used instead.

Personal electronic thermometers can be used on animals in non-contagious areas, but must be cleaned and disinfected after each patient.

Probe thermometers used for continuous temperature monitoring (eg anesthesia or intensive care) should be cleaned and disinfected immediately after use.

Immediate cleaning and disinfection of thermometers is mandatory when they are visibly dirty.

Individual thermometers should be assigned to each high-risk contagious patient (class 4)

They are stored at the place of hospitalization of patients throughout the hospitalization period and cleaned, then disinfected after discharge.

Outpatient examination spaces

The examination rooms are thoroughly cleaned and disinfected daily by the technical staff, after each patient and if they are visibly dirty.

Admission in accommodation spaces

The caretaker cleans the accommodation spaces daily and puts on fresh bedding.

Appropriate clothing should be used in the type of paddling sanitation activity (overalls and protective clothing should be used whenever necessary).

Garbage resulting from the sanitation of these spaces must be stored in the dumpsters in the area specially designed for this purpose. During the transport of the garbage to the storage area, it is prevented to spread it on hallways or alleys. Patients' contact with rubbish bins should be avoided. Dedicated rubbish bins are used for patients at risk of infection (classes 3 and 4).

The cleaning tools used for accommodation spaces in class 1-2 must be cleaned and disinfected once a week. Cleaning tools used for Class 3 and 4 accommodation spaces must be cleaned and disinfected after each use.

General procedure for cleaning a vacant accommodation space

The accommodation spaces used for non-contagious animals are cleaned and disinfected after each patient.

The accommodation spaces used for contagious animals will be cleaned using the general cleaning and disinfection protocol. The caregiver should empty, clean and disinfect the accommodation space as soon as possible, but after cleaning the non-contagious accommodation spaces. The accommodation spaces is considered a contagious area until disinfection and as a consequence, no animal is allowed in it before its complete cleaning and disinfection.

5.6.7.3. Patient hygiene

All animals must be housed in clean cages/rooms. In this regard, caregivers remove faeces and dirty bedding daily from cages / rooms and alleys. If a stand is dirty outside of caregivers' working hours, students and / or clinicians should remove faeces and wet bedding and add clean bedding if necessary.

When an animal leaves the cage/room, the person responsible for discharging the patient informs the caregivers that they must clean and disinfect the cage/room before a new animal can be housed in it. After doing so, the caregiver informs the responsible person of the completion of the action. In the case of newborns, patient hygiene is of paramount importance and therefore wet feces or bedding should be disposed of immediately by participating students or caregivers.

Drinkers and drinking vessels / buckets should be cleaned and disinfected between patients.

Feeding vessels must remain clean throughout the hospitalization of animals and must be cleaned and disinfected between patients. If an animal has not eaten, this should be reported to the clinician and the feed should be removed from the feeding vessel.

The animals must be as clean as possible, excretions or secretions from the animal must be removed.

The environment around the cage/room must be clean, tidy and neat. Medicines and materials should not be left lying, scattered outside the cage/room. Staff and students must remove materials used in medical activities and leave the location in its original condition.

If patients defecate outside their cage/room (whether inside or outside a building), faeces should be removed immediately. If the animal has diarrhea syndrome, the faeces must be removed as soon as possible and the floor cleaned, disinfected and dried.

5.6.7.4. Biosafety and biosecurity in extramural and EPT teaching activities

In extramural and EPT teaching activities, FVM students and staff will observe and apply the biosafety and biosecurity rules and measures specific to each unit.

During each activity carried out extramural or as an EPT, the rules in chapters 5.4.2 shall be taken into account and observed. General rules on staff biosafety and biosecurity and 5.4.3. General rules for space biosafety and biosecurity.

5.7. Biosafety and biosecurity principles applied in food hygiene and control

5.7.1. Protective equipment

- **Lab coat and overalls for practical work / slaughterhouse**

Lab coat and overalls are the first barrier of individual protection against contamination, but they should also be protected with waterproof aprons or capes, in case of increased risk of contact with solutions, reagents, liquids, splashing or soaking with blood or other secretions and excretions.

White lab coats or disposable coats and overalls should be changed whenever they become visibly dirty and at the end of each day.

White lab coats or disposable coats should only be used in laboratories, not in slaughterhouses.

Overalls are recommended for slaughterhouse activities.
Lab coats and overalls for practical work / slaughterhouse must not be worn outside work spaces.
Staff should be aware that taking dirty lab coats and overalls at home for washing could transfer pathogens to the home.
If the uniforms are brought home, they must be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.

- ♦ **Footwear for visits to slaughterhouses**

Washable white rubber boots are used when visiting slaughterhouses. After each visit, the boots shall be cleaned with water and vigorous brushing until complete removal of visible contaminants and decontaminated with a suitable biocide.

- ♦ **Other personal protective equipment**

The following standard protection measures must be applied in all activities:

- proper hand washing;
- wound coverage;
- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
- protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
- protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical personnel and to reduce the risk of transmitting pathogens through clothing.
Protective clothing should be worn whenever there may be contact with an animal or when working in the laboratory (including cleaning).
The size of the protective equipment must be appropriate to the size of the personnel.

- ♦ **Stages of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.
When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.7.2. Hygiene of spaces, equipment, instruments and work surfaces

Proper cleaning of spaces and equipment significantly reduces the transmission of pathogens with zoonotic risk. All work surfaces and equipment must be cleaned immediately after use or whenever necessary.
The surfaces on which food is placed / examined / treated must be made of impermeable and non-porous materials, which can be easily cleaned. Cleaning of these surfaces must precede disinfection, as organic matter

reduces the effectiveness of most disinfectants. Dust and aerosols should be avoided during surface cleaning. Dry surfaces should be moistened before sweeping. The areas to be cleaned must be properly ventilated.

Clean items should be kept separate from dirty items. Protective gloves should be worn when cleaning equipment and surfaces. Equipment cleaning and disinfection operations must take into account their destination and the manufacturer's recommendations. Any equipment that must undergo chemical or thermal sterilization or disinfection procedures must first be cleaned. In order to avoid the production of splashes and aerosols, for all water-resistant objects it is recommended that the cleaning and disinfection steps be performed by immersion in the cleaning / disinfectant solution.

Disinfectants should be used according to the manufacturers' instructions, taking into account in particular dilution and contact time. Before returning the reusable materials, equipment and instruments, the disposable sharp parts (needles, scalpel blades, etc.) will be removed and thrown in special, puncture-resistant containers.

Do not mix dirty laundry with waste, hay or other bedding, sharp objects or anatomical pieces.

Before returning to the warehouse, the equipment and surgical instruments are cleaned of organic matter, washed and decontaminated.

Before using the disinfectant, large wastes should be removed, avoiding the formation of dust or aerosolization, which could favor the dispersion of pathogens in the environment.

In order to decompose the surface biofilm and remove surface residues that prevent or inhibit the deep disinfection process, it is recommended to clean these areas with water and detergent or soap.

Surfaces cleaned with detergent will be rinsed with plenty of water to remove traces of detergents that could inactivate the disinfectant used.

After complete drying, the surfaces are treated with a disinfectant solution prepared according to the manufacturer's instructions, which is left to act according to the manufacturer's recommendations in the Product and Safety Data Sheet.

Excess disinfectant is removed with water, clean paper towels, mop or squeegee.

The disinfectant should be washed on all surfaces or allowed to dry for a sufficient period of time (according to the manufacturer's specifications) before reuse.

Multi-use areas (hallways) must be cleaned and disinfected daily.

- **Use of disinfectants**

It is made in accordance with the manufacturer's recommendations and only for the purpose specified on the label. Sanitary alcohol, betadine and chlorhexidine solutions are used when it is probable or necessary to contact the skin or other tissues. Other disinfectants, such as hypochlorite (bleach), phenols, quaternary ammonium compounds, hydrogen peroxide or aldehydes, are only applied to surfaces, equipment or installations.

Disinfectants are effective when applied to clean, non-porous surfaces. Some materials such as raw wood and mud cannot be disinfected or decontaminated by routine procedures. In addition, non-porous surfaces that are dusty with mud, oil stains, biofilms and other biological materials will not be decontaminated effectively.

- **Disinfection of instruments and equipment**

To reduce the risk of transmission of pathogens, all instruments and equipment must be properly cleaned and disinfected before storage.

- **Disinfectants and detergents usable in FVM**

All authorized biocidal products, detergents and disinfectants for veterinary medicine are accepted for use. The list of these products and their spectrum of activity are presented in Annex 1 of this manual.
Disinfectants used in FVM must take into account their spectrum of antimicrobial action. Detailed information on the antimicrobial action of the different categories of disinfectants is given in Annex 2 of this manual.
Detailed information on the characteristics of the different classes of disinfectants is given in Annex 3 of this manual.

5.7.3. Bio-waste management

All necessary precautions must be taken to prevent injury to needles, scalpels and other sharp objects.
Sharp objects should be disposed of in dedicated, puncture-resistant containers. Once filled, these puncture-resistant containers should be placed in a 60L yellow container and discarded for neutralization.
Waste with an infectious risk must be disposed of in the containers present in the room.
Waste without suspicion of biological contamination with zoonotic or infectious pathogens should be disposed of in current waste bags.
Waste suspected of being infected with a zoonotic agent or an extremely infectious pathogen should be disposed of in special yellow containers.
Contamination of the outside of plastic bags in which high biological risk biological samples have been packaged must be avoided.
Waste management shall be carried out in accordance with the procedure described in Annex 5.

5.7.4. Biosafety and biosecurity of extramural teaching activities and EPT in food industry units

Visits are scheduled at least one week in advance.
In extramural and EPT teaching activities, FVM students and staff will observe and apply the biosafety and biosecurity rules and measures specific to each unit.
During each activity carried out extramural or as an EPT, the rules in chapters 5.4.2 shall be taken into account and observed. General rules on staff biosafety and biosecurity and 5.4.3. General rules for space biosafety and biosecurity.

5.7.4.1. General principles of hygiene

If a student suffers from a contagious disease that is known to be potentially dangerous to food or live animals, he or she must immediately inform the responsible teacher. The student will not be allowed to enter the production area.
If a student knows or is reasonably likely to have certain allergies to insect / bee stings, certain medications, chemicals, reagents, and degradation products, he or she should immediately inform the responsible teacher. The student will not be allowed to engage in activities that involve interaction with these potential hazards.
Persons in charge of the slaughterhouse / food industry must be aware of any zoonotic hazards that may be encountered in their establishments. Where appropriate, they shall inform the representative of the Faculty of

Veterinary Medicine of the presence of such hazards so that students do not come into contact with contaminated materials (eg animals, carcasses, tissues, secretions, excretions, etc.).
To reduce the risk of food contamination, students are given clear instructions on food hygiene issues. As most slaughterhouses are ISO certified and follow HACCP plans, students are required to strictly adhere to internal hygiene rules. They are also required to have a high degree of personal hygiene.
The general hygiene norms are presented / brought to the knowledge of the students by the coordinating teacher together with the legal representative or the delegate of the unit in which the students are to carry out activities specific to their training; students register at the access point in the unit, assuming by signature that they have understood the instructions presented / processed and agree to comply with them. For access to certain units it is necessary for students to complete a statement on their own responsibility regarding their state of health (lack of certain manifestations considered signs of illness eg cough, sneezing, fever, respiratory problems, digestive problems, etc., if they have moved to other units or outside the country and during what period). A copy of the documents signed by the students is handed over to the staff of the slaughterhouse / food industry unit / laboratory, and the second copy of the signed documents is kept by the coordinating teacher and archived. Throughout the visit, the responsible teachers together with the delegates of the unit carrying out activities in the food industry ensure that the students follow the rules of hygiene and good practices. Students are especially asked not to touch the food unless they have to carry out the inspection.
Clothing and footwear worn to visit other units should be cleaned and disinfected before reuse.
The introduction and consumption of any food / liquid inside the slaughterhouse / food industry unit is strictly prohibited.
Any skin lesions should be covered (patches or waterproof dressing).
Smoking and possession and consumption of alcohol or drugs are strictly prohibited in places of production. Wearing jewelry is prohibited (except for wedding rings), including watches, earrings, piercings and false nails are also prohibited. For use in certain units or production areas, the use of fragrant hand creams and highly scented shaving perfumes / lotions is prohibited.

Hand washing

When entering and leaving a food establishment, after contact with an animal, after going to the toilet and when they are visibly dirty, hands should be washed and / or disinfected with antibacterial soap and water, antibacterial wipes or hydro-alcoholic solution.
Disposable paper towels are used to dry your hands and are thrown in a waste container. Disposable latex gloves can also be used, but they are not a substitute for proper hand washing.
Disposable gloves should be worn in case of injuries to the hands (even if they are covered with plaster or bandage).
The handwashing protocol is detailed in chapter 5.4.2.1.

Student clothing

Students are asked to wear clean clothes. When entering food industry units, they must wear a disposable lab coat, a disposable cap, a plastic safety helmet, and clean white boots or disposable boots.
Visiting the units should start in the clean area and end in dirty areas (one-way travel!) To reduce the risk of cross-contamination. Where required, students and staff must completely change their clothing, wash their boots and follow the biosafety and biosecurity procedures in force in that unit.

The equipment (boots, helmets) used in the slaughterhouse should be dedicated to this type of activity. At each entry and exit of the slaughterhouse, the boots must be washed at the boot washing station. The disinfection of the boots is done at the end of the activity. After disinfection, the cysts are then rinsed with clean water and air-dried. The safety helmets are disinfected with water and antibacterial soap at each exit of the unit.

5.7.4.2. Special principles of hygiene when visiting cattle, sheep, pig, and horse slaughterhouses

Students go through the biosafety and biosecurity protocols imposed by the unit, applying all stages of the existing sanitary filter. As much as possible, the unidirectional movement is observed during the visit: students will start the visit from the clean sector to the dirty sector. As far as possible, the visit ends in the reception area of live animals and ante-mortem inspection.
As far as possible, the unidirectional movement is observed during the visit: students will start the visit together with the delegates of the unit carrying out activities in the food industry from the clean sector to the dirty sector. As far as possible, the visit ends in the reception area of live animals and ante-mortem inspection.
The students observe the way of fulfilling the requirements regarding the hygiene assurance in the food profile units starting from the design, design, construction, location and size of the factory with activity in the food field, the endowments of the unit from the equipment point of view, their location. sanitation, disinfection operations, the manner of carrying out the technological activities related to the flow of the unit, the execution of the inspection of the meat, carcasses, organs, together with a veterinarian who performs these activities on the flow. Students must wear full and clean protective equipment (gown, cap, sleeves, gloves, disposable protective footwear or rubber boots).
In the event of a cutting accident, the student immediately stops his inspection, washes his hands and is disinfected with alcohol or another disinfectant (chlorhexidine).

5.7.4.3. Special principles of hygiene when visiting butchers

The hygiene rules applied when visiting the clean area of the slaughterhouse must be observed.

5.7.4.4. Special principles of hygiene when visiting meat processing plant

In the entrance hall of the food industry, students put on protective coat (white lab coats / disposable coats, cap, disposable shoe covers), wash their boots and hands. The students, together with the coordinating teacher and the legal representative or the delegate of the unit, go through the hygienic filter area, disinfect their hands and shoes and enter the production area where the activities take place.

At the exit, the disposable equipment is removed and disposed of in containers specially designed for this purpose and properly inscribed.

5.7.4.4. Special principles of hygiene when visiting poultry slaughterhouses

The general rules of hygiene apply. Students go through the biosafety and biosecurity protocols imposed by the unit, applying all stages of the existing sanitary filter. Students are asked to wear clean clothes. When entering the units they must wear a disposable lab coat, put on a disposable cap, as well as clean white boots or disposable shoe covers. At the exit, the disposable equipment is removed and discarded in containers specially designed for this purpose and properly inscribed.

5.8. Biosafety and biosecurity principles applied in the clinical laboratory of FVM

5.8.1. Protective equipment

- **Lab coats**

Lab coats are the first barrier of individual protection against contamination.
Lab coats should be changed whenever they become visibly dirty and at the end of each day.
Lab coats are used only in the laboratory.
Lab coats are not worn outside work spaces.
Staff should be aware that taking dirty lab coats at home for washing could transfer pathogens to the home. If the lab coats are brought home, they must be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.

- **Laboratory footwear**

To avoid injury, the use of closed-toe shoes is recommended to reduce the risk of injury from sharp objects and to protect the feet from contact with potentially infectious materials such as blood, feces, urine, secretions, excretions and other biological substances..

- **Other personal protective equipment**

The following standard protection measures must be applied in all activities:

- proper hand washing;
- wound coverage;
- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions);
- protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or face mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public.
Protective clothing should be worn whenever working in the laboratory (including cleaning).
The size of the protective equipment must be appropriate to the size of the personnel.

5.8.2. Space hygiene

The general rules of hygiene apply.

5.8.3. Bio-waste management

The general procedure described in Annex 5 shall apply.

5.8.4. Specific rules for the activities carried out in the department of molecular biology and genetic analysis

A lab coat will be used for each work room: 1. primary preparation room, extraction and coupling of nucleic acids; 2. nucleic acid amplification chamber; 3. pre-PCR camera. Do not use the same lab coat from one workroom to another.
The lab coat should be used while working in the workroom.
Disposable laboratory gloves must be made of nitrile and will be used differently on each workroom. Do not use the same disposable nitrile laboratory gloves from one work room to another.
Disposable caps will be used for each work room.
Disposable boots will be used over the laboratory footwear for each work room.

5.8.5. Specific rules for the activities carried out in the department of biochemistry, hematology, immunology

Disposable caps will be used.
Disposable boots will be used over the laboratory footwear.

5.9. Biosafety and biosecurity principles applied to practical works at Anatomy

5.9.1. Staff biosafety and biosecurity

It is recommended that staff be vaccinated against tetanus and rabies.
If a student cuts himself during the dissection, he must immediately stop the dissection, inform the responsible teacher and wash his hands. The wound is inspected and disinfected with povidone iodine / betadine or other equivalent product. If the wound is deep, the emergency procedure should be followed. If the wound is superficial, it is covered with tape to prevent contamination of the wound.
If a student is not immunized against tetanus, he or she needs hospital care, a tetanus serum, and a tetanus vaccine.
Hand washing and disinfection are mandatory before leaving the work area. The use of disposable gloves during dissection is mandatory, but this does not exempt the student from washing and disinfecting hands before leaving the work area.
If a contagious disease is suspected, students will be asked to leave the dissection room after discarding disposable gloves and aprons in a separate yellow container, washing and disinfecting their hands and instruments. All contaminated bodies will be collected by staff in special containers.
Instrumentation, rubber boots and special footwear, as well as dissection tables and rooms, will be completely washed and disinfected.
Students must wear shoe covers at the entrance to the practical work room and remove them as soon as they leave the risk area..
It is strictly forbidden to eat food and liquids inside the Building 7- Anatomy, except for offices.

All course materials brought to the dissection room must be plasticized and cleaned after each dissection session (soap and water) and then disinfected.
Visitors have access only to the corridors and the clean area of the pavilion.
Children visiting the pavilion have access only accompanied by an adult and only in the corridors and in the clean area.
Neither staff nor students are allowed to bring their pets to the Building 7- Anatomy.
The access of any animal that is not used for the purposes of the activities carried out in the anatomy pavilion is strictly forbidden.

5.9.2. Hygiene of instruments, equipment and spaces

Dissection instruments should be washed and disinfected at the end of each work session.
Used scalpel blades should be disposed of in special containers. Dirty gloves should be disposed of in yellow waste containers.
The dissection instruments used by staff must be washed and disinfected every day.
Every day, the dissection chambers will be swept, washed with water (hose) and scraped. Dissection tables will be washed daily with industrial detergents and disinfected at the end of each dissection week.

5.9.3. Management of animals, bio-waste and corpses

For the activities carried out at Anatomy, only healthy animals are purchased.
Neutralization of bio-waste and carcasses shall be carried out in accordance with the procedure set out in Annex 5.

5.10. Biosafety and biosecurity principles applied in the laboratories of Microbiology-Immunology

5.10.1 General norms of personnel biosecurity within the discipline Microbiology-Immunology

Hand hygiene

- **Hand hygiene should be done in the following situations:**
  - Before and after handling each patient;
  - After any contact with blood, body fluids, secretions, excretions and contaminated objects, whether or not gloves have been worn;
  - Immediately after removing gloves;
  - Between different procedures in the same patient, to prevent cross-contamination of different locations of the body;
  - After handling samples or laboratory cultures;
  - After cleaning cages, paddocks, tables or any contaminated surface;
  - Before meals, breaks, smoking or leaving work at the end of the working day;
  - Before and after the use of toilets (toilets);
- **Recommended hand washing technique:**
  - Wet hands and forearms with warm water;
  - Put ~ 3-5 ml (1-2 complete pumps) of soap in the palm of your hand;

- Rub heavily on each side of the hands beyond the wrist for 10-30 seconds, rub each finger individually and between the fingers, under the rings and nails;
- Rinse hands under running hot water until all soap residue is removed;
- Dry your hands with a disposable paper towel or hot air dryer.

♦ **Recommended technique for using a hand sanitizer:**
- Pour an appropriate amount of disinfectant into the palm of your hand;
- Rub the disinfectant with the fingertips of the opposite hand, then spread it all over the hand;
- Repeat the procedure with the opposite hand;
- Rub both hands until dry, without rinsing.

♦ If it is not possible to wash your hands immediately, wet wipes with alcohol or other sanitizers may be used until hot water and soap are available.

♦ FMV staff and students who work directly with animals or who handle biological samples are advised to keep their nails short and not wear jewelry on their fingers or hands.

♦ All lesions on the skin of the hands and forearms should be covered with a waterproof bandage.

5.10.2. Protective equipment

♦ **Lab coats**

Lab coats are the first barrier of individual protection against contamination.
Lab coats should be changed whenever they become visibly dirty and at the end of each day.
Lab coats are used only in the laboratory.
Lab coats are not worn outside work spaces.
Staff should be aware that taking dirty lab coats at home for washing could transfer pathogens to the home. If the lab coats are brought home, they must be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.

♦ **Laboratory footwear**

To avoid injury, the use of closed-toe shoes is recommended to reduce the risk of injury from sharp objects and to protect the feet from contact with potentially infectious materials such as blood, feces, urine, secretions, excretions and other biological substances.

♦ **Other personal protective equipment**

The following standard protection measures must be applied in all activities:

• proper hand washing;
• wound coverage;
• use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions);
• protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or face mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public.

Protective clothing should be worn whenever working in the laboratory (including cleaning).

The size of the protective equipment must be appropriate to the size of the personnel.

5.10.3. Hygiene of the personal protective equipment

♦ **Lab coats, overalls and uniforms for practical work**

Lab coats and overalls are the first barrier to personal protection against contamination, but in the event of an increased risk of contact with contaminated liquids, splashing or soaking with blood or other secretions and excretions, these should in turn be protected by waterproof aprons or capes. Lab coats and overalls should be changed whenever they become visibly dirty or contaminated and at the end of each day. Lab coatss should only be used in laboratories, not in clinical activities.

♦ **Clinical footwear**

In order to prevent the spread of biohazardous materials on contaminated floors in other areas of the laboratory, footwear or sole protection may be required. they can contaminate the floor (animals with severe diarrhea). Specially designated footwear should also be used around stables for horses or other animals known to be carriers of infectious agents such as Salmonella. Disposable footwear must be disposed of when leaving the contaminated area and disposed of in containers intended for this type of waste or stored in the contaminated area until it is collected in special garbage bags.

♦ **Other personal protective equipment**

The following standard protection measures shall be applied in all laboratory activities and whenever they come into contact with animals, their breeding environment and the biological samples taken from them:

- proper hand washing;
- wound coverage;
- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
- protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
- protection of the conjunctival, nasal and oral mucosa in case of risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical personnel and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public. Protective clothing should be worn whenever there may be contact with an animal or when working in a clinic (including cleaning).

The size of the protective equipment must be appropriate to the size of the personnel.

♦ **Stages of equipping and removing personal protective equipment**

When equipping, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) goggles, 6) protective gloves.

When unpacking, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.10.4. Space hygiene

Cleaning and disinfection of equipment and work surfaces

Proper cleaning of premises and equipment significantly reduces the transmission of zoonotic risk pathogens. All work surfaces and equipment must be cleaned immediately after use or whenever necessary.

Cleaning of these surfaces must precede disinfection, as organic matter reduces the effectiveness of most disinfectants. Dust and aerosols should be avoided during surface cleaning, as they may contain pathogens for humans and animals. Dry surfaces should be moistened before sweeping. The areas to be cleaned must be properly ventilated.

Equipment cleaning and disinfection operations must take into account their intended use and the manufacturer's recommendations. Any equipment that must undergo chemical or thermal sterilization or disinfection procedures must first be cleaned. To avoid splashing and spraying, it is recommended that all water-resistant objects be cleaned and disinfected by immersion in the cleaning / disinfectant solution.

To ensure efficacy, disinfectants should be used according to the manufacturer's instructions, taking into account in particular dilution and contact time. Before returning the reusable materials, equipment and instruments, the disposable sharp parts (needles, scalpel blades, etc.) will be removed and thrown into special, puncture-resistant containers.

Before using the disinfectant, the coarse residues should be removed, avoiding the formation of dust or aerosolization, which could favor the dispersion of pathogens in the environment.

In order to decompose the surface biofilm and remove surface residues that prevent or inhibit the deep disinfection process, it is recommended to clean these areas with water and detergent or soap.

Surfaces cleaned with detergent should be rinsed with plenty of water to remove traces of detergent that could inactivate the disinfectant used.

After complete drying, the surfaces are treated with a disinfectant solution prepared according to the manufacturer's instructions, which will be left on for at least 15 minutes.

Excess disinfectant is removed with water, clean paper towels, mop or squeegee.

5.10.3. Bio-waste management

Wastes from teaching / research activities

One of the most effective methods of infection control is the management of the resulting waste, ie how it is collected, packaged, temporarily stored and disposed of. These regulations are the subject of the Order of the Ministry of Health and Family no. 219 - 2002 for the approval of the technical norms regarding the management of waste resulting from medical activities and of the methodology of data collection for the national database on waste resulting from medical activities.

Waste from medical activities is non-hazardous and hazardous waste, which is produced in FMVB.

On practical criteria it is classified in:

- non-hazardous waste
- dangerous waste

Non-hazardous waste - waste whose composition is similar to that of household waste and which does not present a major risk to human health and the environment. They result from the activity of technical-medical, administrative, etc. medical services. This waste is disposed of in the same way as household waste.

The following categories are included:

-packaging of sterile materials

-thread
-food waste
-bags and other plastic packaging, glass containers that have not come into contact with blood or biological products

Hazardous waste - is waste resulting from medical activities that pose a risk to human health and the environment :.

- Infectious waste is liquid and solid waste that contains or is contaminated with blood or other biological fluids as well as materials that contain or have come in contact with viruses, bacteria, parasites and / or toxins of microorganisms. They include:

syringes
container that contained blood or other biological fluids
glove
dressing
plastic container for collecting urine
used laboratory materials etc.

- stinging - cutting waste - are the waste that can cause mechanical damage by stabbing or cutting. They include:

needles
scalpel blades
This waste is considered infectious waste.
-chemical waste - are solid, corrosive or flammable chemicals.
They include:
chemical residues
laboratory glassware
broken glassware or not that came in contact with infectious material
reagents and substances used in the laboratory
damaged cleaning and disinfection substances

The names of the waste categories defined above correspond to the following names from the European Waste Catalog contained in Government Decision no. 856/2002:

- non-hazardous waste corresponds to code 18 01 04 are wastes whose collection and disposal are not subject to special measures regarding infections.
- infectious wastes correspond to code 18 01 03 are wastes whose collection and disposal are subject to special measures for the prevention of infections
- stinging-cutting waste corresponds to code 18 01 01
- chemical wastes correspond to code 18 01 05

Waste disposal

♦ **Biosecurity of sharp waste disposal**

All necessary precautions must be taken to prevent injury with needles, scalpel blades and other sharp objects. To prevent stinging with syringe needles, it is forbidden to put a cap on used needles in clinical activities. Staff and students should avoid intentionally bending or breaking the needles. Sharp objects should be disposed of in dedicated, puncture-resistant containers. Once filled, these puncture-resistant containers should be placed in a 60L yellow container and discarded to neutralize.

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♦ **Biosecurity disposal of other hospital waste**

Waste with an infectious risk must be disposed of in containers present in the room where those veterinary medical activities were carried out.

Hospital waste from animals without suspicion of infection with zoonotic or infectious pathogens should be disposed of in current waste bags.

Hospital waste from animals suspected of being infected with a zoonotic agent or a highly infectious pathogen should be disposed of in special yellow containers.

All waste generated in insulators must be disposed of in yellow containers. Biological samples collected from potentially contagious patients must be sealed in waterproof plastic bags (double pack) and labeled with the appropriate information and risks before being sent to diagnostic laboratories. Contamination of the outside with plastic bags containing high-risk biological samples has been avoided.

Sterilization

The organization of the actual sterilization activities, as well as the related activities (washing, decontamination and packaging, storage and delivery) will take into account the need to respect the circuits, to avoid control gaps during their realization and to use other spaces than those designated, central sterilization service.

STERILIZATION ON THE HOT AIR STERILIZER (pupinel, etuva)

Glassware and instruments that do not support pressure steam sterilization are sterilized.

It is totally contraindicated for textiles, liquids and rubber.

Sterilization phases:

- for heating the appliance - the time interval between switching on the appliance and starting to increase the temperature
- latency (homogenization) - the time interval in which the temperature propagates and increases in order to reach the sterilization temperature in the metal boxes / packages in the baskets
- sterilization - 180oC -1 hour
- For cooling

Sterilization time is measured from the moment the sterilization temperature is reached inside the load.

Never open the hot air sterilizer during the sterilization period to introduce new packages.

Duration of maintaining sterility

- 2 weeks for materials packed in paper, provided that their integrity is maintained.

At the end of the complete sterilization cycle

- Do not open the appliance until the temperature is below 50oC
- Sterilization efficiency indicators are checked
  -adhesive tapes with physico-chemical indicators
  -physico-chemical indicators "integrators"
- Medical devices and sterilized materials are labeled for identification. Write down the date, time, cycle and the person performing the sterilization.
- It is noted in the sterilization notebook: date, contents of the boxes, temperature at which the sterilization was performed, duration, results **of physico-chemical indicators, signature of the person responsible for sterilization, observations.**

Evaluation of sterilization effectiveness with hot air sterilizer

-for each cycle it reads:
- temperature and note in the sterilization notebook
-changing the color of the physical-chemical indicator on the box

-changing the color of the "integrator" indicator for the hot air sterilizer, which is placed inside the metal boxes.
- the phases of the sterilization process are controlled, the time / temperature graph of the complete sterilization cycle, with the device loaded with the quantity recommended by the manufacturer.
-biological indicator with subtilis bacillus to control the efficiency of sterilization.

PRESSURE STEAM STERILIZATION (autoclaving)
Sterilization phases
- pre-treatment and preheating phase (pre-accumulation) - several sequences of steam inlet and evacuation and aims to remove the air from the sterilizing material at the same time as its necessary wetting before the sterilization phase.
- sterilization phase - the sterilization time is measured from the moment the sterilization temperature is reached

-2 atmospheres - 134oC - 20 min.-infected
-1.1 atm. -121oC - 20 min.- culture media

At the end of the complete sterilization cycle
Never open the steam sterilizer under pressure until the temperature is below 86oC.
Baskets with sterilized material are temporarily stored on a surface specially designed for sterile material and are arranged in cabinets specially designed for storage of sterile material.
Sterilization efficiency indicators:

- Bag-ChemoStrip chemical tests (134, 121 ° C)) at each sterilization cycle.
- biological indicators-EZ Test once a month

Duration of maintaining sterility
- 2 weeks for paper wrapped materials

Condition - maintaining the integrity of the packaging
Evaluation of sterilization effectiveness

- for each cycle it is read;
-temperature and pressure
-changing the color of the physical-chemical test
-autoclave maintenance - recommended by the manufacturer

After any intervention on the autoclave, it is recommended:
-checking the temperature and pressure
The specific norms of labor protection in the field of health are observed.
MSF-approved devices are used.
Technical working instructions are elaborated and displayed on the wall.
The nurse responsible for sterilization is trained and accredited to work with the steam sterilizer under pressure.

CONDITIONS FOR MAINTENANCE OF STERILITY OF STERILIZED MATERIAL
Metal baskets with sterilized material are stored in sterile cabinets. They are taken out of the closet only when used, any extra handling creates contamination conditions.

5.11. Biosafety principles applied in the laboratories of the Physiology discipline

5.11.1. General norms of biosecurity of the staff of the Physiology discipline

Hand hygiene

- **Hand hygiene should be done in the following situations:**
  - Before and after handling the equipment / instruments and devices within the discipline;
  - After any contact with blood, body fluids, secretions, excretions of laboratory animals (frogs, mice, rabbits, chickens) and contaminated objects, whether or not gloves have been worn;
  - Immediately after removing gloves;
  - After handling laboratory animals (frogs, mice, rabbits, chickens) / biological samples - after vivisection (frogs);
  - After cleaning cages, paddocks, tables or any contaminated surface;
  - Before meals, breaks, smoking or leaving work at the end of the working day;
  - Before and after use of toilets (toilets).
- **Recommended hand washing technique:**
  - Wet hands and forearms with warm water;
  - Put ~ 3-5 ml (1-2 complete pumps) of soap in the palm of your hand;
  - Rub heavily on each side of the hands beyond the wrist for 10-30 seconds, rub each finger individually and between the fingers, under the rings and nails;
  - Rinse hands under running hot water until all soap residue is removed;
  - Dry your hands with a disposable paper towel.
- **Recommended technique for using a hand sanitizer:**
  - Pour an appropriate amount of disinfectant into the palm of your hand;
  - Rub the disinfectant with the fingertips of the opposite hand, then spread it all over the hand;
  - Repeat the procedure with the opposite hand;
- If it is not possible to wash your hands immediately, wet wipes with alcohol or other sanitizers may be used until hot water and soap are available.
- Staff and students working directly with animals or handling biological samples are advised to keep their nails short and not wear jewelry on their fingers or hands.
- All lesions on the skin of the hands and forearms should be covered with a waterproof bandage.

Hygiene of the personal protective equipment and street clothes

- **Street clothing and footwear**

Street clothing and footwear (capes, jackets, coats, boots, boots, etc.) should not be introduced / stored in the practical work rooms of the Physiology discipline. They should be stored in cupboards / bunks / wardrobes whenever possible.

- **Lab coats, overalls and uniforms for practical / farm / clinical works**

White long-sleeved lab coats (which must be closed) are mandatory for students, teachers, teaching and non-teaching staff and are the first barrier of individual protection against contamination. Lab coats should be changed whenever they become visibly dirty or contaminated and at the end of each day. Laboratory gowns should only be used in laboratories.

♦ **Other personal protective equipment**

The following standard protective measures shall be applied in all clinical activities and whenever they come into contact with animals, their breeding environment and the biological samples collected from them:

- proper hand washing;
- wound coverage;
- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
- protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
- protection of the conjunctival, nasal and oral mucosa in case there is a risk of splashing with blood or other contaminated liquids (goggles or face mask).

Personal protective equipment is used both to protect teachers, teaching and non-teaching staff and students, and to reduce the risk of transmitting pathogens through clothing.

Securing sharp objects

♦ **The basic principles of safety when handling sharp objects are:**

- The student / teacher who uses sharp objects is responsible for their safe disposal;
- Sharp objects are not passed from hand to hand;
- Sharpened containers are replaced when full (not recycled);
- Each practical work room is equipped with a special container for sharp objects.

After using disposable sterile needles, students should pay attention to reinserting the needle into the protective cap. As far as possible, needles should not be removed from the syringe by hand. Also, the caps of the needles are not removed with the help of the teeth.

Containers for sharp objects are the safest and most economical way to collect them for the destruction of needles, scalpel blades and other sharp objects and are located in every working room. Sharp objects should not be transferred from one container to another.

General measures for the protection of personnel who sanitize the premises

When carrying out decontamination operations, the appropriate protective equipment is used, represented by a robe, protective mask, and visor.

Personnel performing cleaning activities must be trained, have adequate protective equipment and use cleaning and sanitation products in accordance with the product data sheet.

Mechanical cleaning / disinfection should prevent contact of damaged skin and mucous membranes with residues of blood or other biological fluids. Skin lesions should be protected with a waterproof bandage.

At the end of the disinfection, the operator removes his protective equipment and washes his hands.

Other biosecurity and personal hygiene measures

- **Consumption of food and drink**

Consumption and storage of food and drink in the premises intended for practical works are not permitted. Staff and students are also prohibited from eating, drinking, or storing food in areas where biological testing, preparation, or storage of reagents is performed. This includes the practical work rooms, the halls, the research laboratory. Storage of food and drink is not permitted in any refrigerator / freezer used for the storage of medicines or biological samples.

5.11.2. General norms of space biosecurity within the Physiology discipline

Cleaning and disinfection of equipment and working surfaces

Proper cleaning of premises and equipment significantly reduces the transmission of zoonotic risk pathogens. All work surfaces and equipment must be cleaned immediately after use or whenever necessary.

The surfaces on which laboratory animals, biological samples, apparatus, glassware and reagents are placed must be of impermeable and non-porous material which can be easily cleaned. Cleaning of these surfaces must precede disinfection, as organic matter reduces the effectiveness of most disinfectants. Dust and aerosols should be avoided during surface cleaning, as they may contain pathogens for humans and animals. Dry surfaces should be moistened before sweeping. The areas to be cleaned must be properly ventilated.

Clean items should be kept separate from dirty items. Protective gloves should be worn when cleaning equipment, animal cages and surfaces. Equipment cleaning and disinfection operations must take into account their intended use and the manufacturer's recommendations. Any equipment that must undergo chemical or thermal sterilization or disinfection procedures must first be cleaned. To avoid splashing and spraying, it is recommended that all water-resistant objects be cleaned and disinfected by immersion in the cleaning / disinfectant solution.

Before returning to storage, the equipment, glassware and surgical instruments are cleaned of organic matter, washed and decontaminated.

Before using the disinfectant, the coarse residues should be removed, avoiding the formation of dust or aerosolization, which could favor the dispersion of pathogens in the environment.

In order to decompose the surface biofilm and remove surface residues that prevent or inhibit the deep disinfection process, it is recommended to clean these areas with water and detergent or soap.

Surfaces cleaned with detergent should be rinsed with plenty of water to remove traces of detergent that could inactivate the disinfectant used.

After complete drying, the surfaces are treated with a disinfectant solution prepared according to the manufacturer's instructions, which will be left on for at least 15 minutes.

Excess disinfectant is removed with water, clean paper towels, mop or squeegee.

Waste disposal

- **Biosecurity of sharp waste disposal**

All necessary precautions must be taken to prevent injury to staff and students with needles, scalpel blades and other sharp objects. Staff and students should avoid intentionally bending or breaking the needles. Sharp objects should be disposed of in dedicated, puncture-resistant containers. Once filled, these puncture-resistant containers should be placed in a 60L yellow container and discarded to neutralize.

- **Biosafety to dispose of other bio-waste**

Biological waste (such as organs, frogs used for vivisection) must be disposed of in the containers present in the practical work room where those veterinary medical activities were carried out.

Biological samples or any other anatomical piece may not be removed from the Physiology discipline except for destruction.

Disinfectants

- **Use of disinfectants**

It is made in accordance with the manufacturer's recommendations and only for the purpose specified on the label. Sanitary alcohol, betadine and chlorhexidine solutions are used when it is probable or necessary to contact the skin or other tissues. Other disinfectants such as hypochlorite (bleach), phenols, quaternary ammonium compounds, hydrogen peroxide or aldehydes are only applied to surfaces, equipment or installations.

Disinfectants are effective when applied to clean, non-porous surfaces. Some materials such as raw wood and mud cannot be disinfected or decontaminated by routine procedures. In addition, non-porous surfaces that are dusty with mud, oil stains, biofilms and other biological materials will not be decontaminated effectively.

- **Disinfection of instruments and equipment**

To reduce the risk of transmission of pathogens, all instruments and equipment must be properly cleaned and disinfected prior to storage.

To reduce the risks associated with the use of glass thermometers (breakage, mercury contamination) they are not used in the discipline of Physiology.

The devices (sphygmomanometers, electrocardiograph, vital function monitor, stethoscopes, polygraph, etc.) as well as their attachments are disinfected daily and whenever necessary with special disinfectant solutions.

5.11.3. Identification and disruption of pathogen release circuits

Risks associated with the staff of the Physiology discipline

Physiology personnel must follow the rules in the field of occupational safety and health and fire prevention and extinguishing applied at the USAMV level. In this regard, the ban on smoking in the workplace must be respected.

5.11.4. Biosafety of chemicals, reagents and drugs

Storage and access

The chemicals, reagents and medicinal substances used in the practical work carried out in the discipline of Physiology must be kept in optimal conditions, in accordance with the legal provisions in force and the recommendations of the manufacturers, at the appropriate temperature, in the dark, in a clean environment. temperature and / or humidity.

Validity

The date of opening or breaking the sterility seal should be clearly labeled on the container of the substance, including liquids, with a waterproof marker.

Reagent preparation

The preparation of reagents for practical work must be carried out by or under the direct supervision of veterinarians. During preparation, contamination of the chemical with other substances or residues must be prevented.

The preparation of toxic or dangerous reagents must be carried out safely for the operator, using appropriate personal protective equipment (depending on the type of medicine: gloves, goggles, mask, hood, etc.). The number of people assisting in the preparation of these medicines should be kept to a minimum and all participants should be properly equipped.

5.11.5. Procedure for rodent control, disinsection, cleaning, disinfection, sterilization and disposal of waste

Cleaning

The purpose of cleaning and disinfection practices is to remove or destroy microorganisms that are potentially pathogenic from the spaces intended for teaching activities within the discipline of Physiology.

Technical norms regarding the cleaning and disinfection in the sanitary units represent the annex no. 1 to the Order of the Ministry of Health and Family no. 261/2007 for the approval of the technical norms regarding the cleaning, disinfection, performing the sterilization and maintaining the sterility of the sanitary objects and materials in the state and private sanitary units.

Cleaning is the most common method of decontamination used in sanitary units, which ensures the removal of microorganisms from surfaces, objects or skin, along with the removal of dust and organic substances.

The correct application of cleaning methods for surfaces, objects and equipment can achieve a decontamination of 95-98% very close to that obtained by disinfection. Cleanliness acts on microorganisms, but it does not replace disinfection. Disinfection is the process by which most or all pathogenic microorganisms (98-99%) are destroyed from objects in the inert environment except for bacterial spores.

General methods of cleaning:

- washing
- wiping
- vacuuming

By washing, the powders and organic substances are removed, by watering, simultaneously with mechanical procedures. Washing power depends on the amount of watering. Washing is done by using hot water and surfactants. Hot water at 35-45ºC has a higher washing power than cold water, because it has a higher emulsifying and dissolving power. Soaking in hot water (above 55oC) has the disadvantage of protein coagulation, which makes it adherent to the treated substrate.

Depending on the substrate, soap or anionic detergents or products labeled and approved by the Ministry of Health and Family as a disinfectant detergent or product for cleaning and decontamination are added to the hot water.

Conditions of effectiveness:

- • use of hot water with appropriate chemical qualities and high watering power, by adding optimal amounts of surfactants
- • association of washing with mechanical methods: stirring, brushing, rubbing
- • observance of soaking and washing times
- • washing should be followed by copious rinsing.

Wet wiping of surfaces removes microorganisms. It is practiced for maintaining cleanliness between washes.

Conditions of effectiveness:

- • use of clean cloths
- • moistening them with fresh solutions of products labeled and approved by MSF as detergent, disinfectant detergent
- • frequent change of cloths and wiping water

Cleaning and disinfection of rooms must always be associated with ventilation. Cleaning is practiced as a method of prophylactic decontamination.

Products used in the cleaning process

Cleaning is done with products labeled by the manufacturer as:

- • cleaning products
- • detergent-disinfectant products

Soaps

- • soft soap - tiles, mosaic, etc.

Detergents

- • neutral or liquid detergents for: furniture, flooring and manual washing of textiles
- • alkaline detergents or strippers: basic floor maintenance
- • acidic or descaling detergents: cleaning materials with stone deposits
- • detergents-disinfectants or cationic detergents: cleaning action and secondary disinfection

Fundamental rules in the use of products used in cleaning activity

- ♦ Use of products approved / authorized by MSF for the health sector
- ♦ • Follow all the manufacturer's recommendations
- ♦ • Observance of labor protection norms
- ♦ Labeling and sealing of containers
  - • The name of the product and the family to which it belongs
  - • Terms of validity

- Working dilution
- The date on which the working dilution was made
- The period of use of the diluted product maintained in adequate conditions
- It is NOT allowed to mix products
- The use of food packaging for cleaning products is NOT permitted
- Distribution of products at the place of use in the original packaging
- Ensuring stock rotation to meet the expiration date
- Empty packaging is NOT allowed until it has been cleaned or neutralized

Cleaning maintenance material

The cleaning material must be used in accordance with the rules of hygiene in order for the cleaning and disinfection operations to achieve their purpose, that of eliminating microorganisms.
Regular training of cleaning staff is recommended.

Maintenance rules for cleaning utensils

Every day, after each cleaning operation and at the end of the working day, the utensils used will be washed, cleaned, disinfected and dried.
Personnel from the Physiology discipline who perform the cleaning and decontamination operations of the cleaning material will wear non-sterile latex gloves.

Disinfectant

Disinfection is the subject of annex no. 1 to the Order of the Ministry of Health and Family no. 261/2007 for the approval of the technical norms regarding the cleaning, disinfection, sterilization and keeping the sterility of the sanitary objects and materials in the state and private sanitary units
Disinfection is applied in cases where cleaning does not eliminate the risks of spreading the infection, and sterilization is not necessary.
In any disinfection activity, occupational safety measures must be applied to prevent accidents and poisoning.
Disinfection in the discipline of Physiology is performed by chemical means.
Disinfection by chemical means is performed using chemical disinfectants that are composed of chemicals from the following classes:

- halogens (chlorine-releasing compounds or solutions)
- alcohol

Chemical disinfection

It is made by using chemical disinfectants.

GENERAL RULES OF DISINFECTION PRACTICE

Prophylactic disinfection completes the cleaning, but does not replace it.
Only disinfectants approved by the Ministry of Health and Family should be used
Disinfectants with a spectrum of bactericidal, virulicidal, fungicidal and / or sporicidal action must be used in chemical disinfection.

Disinfectants should be used at the recommended concentrations and operating times recommended by the manufacturer.
The use of disinfectants is done in compliance with the rules of labor protection and with the training of staff on the use of disinfectants.

Waste resulting from teaching and research activities in the discipline of Physiology

One of the most effective methods of infection control is the management of the resulting waste, ie how it is collected, packaged, temporarily stored and disposed of. These regulations are the subject of the Order of the Ministry of Health and Family no. 219 - 2002 for the approval of the technical norms regarding the management of the waste resulting from medical activities and of the methodology of data collection for the national database regarding the waste resulting from the medical activities.

The wastes resulting from the didactic and research activities are the non-hazardous and dangerous wastes, which are produced within the Physiology discipline.

On practical criteria it is classified in:

- non-hazardous waste
- dangerous waste

Non-hazardous waste - waste whose composition is similar to that of household waste and which does not present a major risk to human health and the environment. They result from the current didactic and administrative activity, etc. This waste is disposed of in the same way as household waste. The following categories are included:

-packaging of sterile materials
-thread
-food waste
-bags and other plastic packaging, glass containers that have not come into contact with blood or biological products

Hazardous waste - is waste resulting from teaching or research activities that pose a risk to human health and the environment :

- **Infectious waste** is liquid and solid waste that contains or is contaminated with blood or other biological fluids. They include:

- syringes
- container that contained blood or other biological fluids
- glove
- dressing
- used laboratory materials
- spinal or spinal frogs, organs or fragments of organs resulting from vivisection, etc.

- **Stinging - cutting waste** - are waste that can cause mechanical damage by stinging or cutting. They include:

- needlese
- a scalpel blades

This waste is considered infectious waste.

- chemical waste - are solid, corrosive or flammable chemicals.

They include:

- chemical residues
- laboratory glassware
- broken glassware or not that came in contact with infectious material
- reagents and substances used in the laboratory
- damaged cleaning and disinfection substances

The names of the waste categories defined above correspond to the following names from the European Waste Catalog contained in Government Decision no. 856/2002:

o - non-hazardous waste corresponds to code 18 01 04 are wastes whose collection and disposal are not subject to special measures regarding infections.

o -infectious wastes correspond to code 18 01 03 are wastes whose collection and disposal are subject to special measures to prevent infections

o - stinging-cutting waste corresponds to code 18 01 01

o -chemical wastes correspond to code 18 01 05.

WASTE COLLECTION AND PACKAGING UNDER THE COURSE OF PHYSIOLOGY

The collection and separation of waste by categories represents a first stage in the management of waste resulting from medical activities and is carried out at the place of their production - respectively in the practical work rooms / research laboratory within the Physiology discipline.

The packaging in which the collection is made and which comes in direct contact with hazardous waste is disposable and is disposed of with the contents.

These packages, depending on the waste category, are color-coded :

-yellow -for hazardous waste

-black - for non-hazardous waste

The "Biological Hazard" icon is used for infectious and stinging waste.

Infectious waste is collected in yellow polyethylene bags marked with the icon. The bags must be made of high density polyethylene to have high mechanical strength and to prevent leakage of liquid. The bag should close easily and securely. The size of the bag is appropriate to the amount of waste collected. The degree of filling of the bag shall not exceed three quarters of its volume. The bag is inserted in the bins provided with a lid.

Cutting-stinging waste is collected in boxes made of material resistant to mechanical action. The boxes are provided at the top with a special lid that allows the introduction of waste and prevents its removal after filling, being provided with a permanent closure system. The boxes are equipped with a sturdy handle to be easily transported to the storage place. The boxes are approved by the Ministry of Health and Family. They must be waterproof, watertight, without the possibility of contamination of the personnel handling them and be inscribed.

The second packaging in which the bags are deposited is represented by mobile containers with rigid walls located in the temporary storage space. They are labeled "Medical Waste" and bear the appropriate icon.

They are easily washable and resistant to the action of disinfectant solutions. The airtight container is equipped with a fastening system adapted to the automatic pick-up system in the transport vehicle. It is forbidden to deposit unpackaged hazardous waste.

Stickers with the identification data of the source of waste production are pasted on the packaging.

EDUCATION AND TRAINING OF STAFF IN THE DISCIPLINE OF PHYSIOLOGY IN THE FIELD OF WASTE MANAGEMENT RESULTING FROM TEACHING AND RESEARCH ACTIVITIES

The unit is obliged to ensure the education and training of the personnel regarding the management of the waste resulting from the medical activity.

Discipline staff need to know

- the type and quantities of waste produced in the unit
- risks to the environment and human health at every stage of the waste disposal cycle
- the waste management plan resulting from the didactic and research activities carried out within the Physiology discipline

The teachers, as well as the teaching and non-teaching auxiliary staff who carry out their activity within the discipline have the following responsibilities;

- supervises how the procedure is applied
- applies the procedures stipulated by the procedure
- apply the procedure for determining the quantities produced by types of waste.

5.12. Biosafety principles applied in the pathophysiology laboratory

5.12.1. Protective equipment

♦ **Lab coats**

Lab coats are the first barrier of individual protection against contamination.
Lab coats and overalls should be changed whenever they become visibly dirty and at the end of each day.
Lab coats are used only in the laboratory.
Lab coats are not worn outside the workplace.
Staff should be aware that taking dirty lab coats and overalls home for washing could transfer pathogens to the home.
If uniforms are brought home, they should be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.

♦ **• Laboratory footwear**

To avoid injury, it is recommended to wear closed-toe shoes that reduce the risk of injury from sharp objects and to protect the feet from contact with potentially infectious materials such as blood, feces, urine, secretions, excretions and other biological substances.

♦ **• Other personal protective equipment**

The following standard protection measures must be applied in all activities:

• proper hand washing;

- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions);
- protection of the conjunctival, nasal and oral mucosa in case there is a risk of splashing with blood or other contaminated liquids (goggles or face mask).

Personal protective equipment is used both to protect veterinary medical personnel and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public.
Protective clothing should be worn whenever working in the laboratory (including cleaning).
The size of the protective equipment must be appropriate to the size of the personnel.

5.12.2. Space hygiene

The general hygiene measures described in Chapter 5.4.3 apply.

5.12.3. Hygiene of laboratory animals

Laboratory animals should be housed in clean cages.
The technical staff must clean the cages every day.
Water vessels should be cleaned regularly (as often as necessary and at least twice a day) and cleaned and disinfected. The presence of water in the vessel should be checked regularly; the vessel should be refilled with fresh water at least twice a day after cleaning.
Food containers should be cleaned regularly (as needed, at least twice a day) and cleaned and disinfected.
Laboratory animals should be kept as clean as possible, and any excretions or secretions should be removed as soon as they are observed.
The environment around the cage must be clean, tidy and well-kept, ie without medicines or surrounding materials, without bedding outside the cage.
If patients defecate outside a cage (either inside the building or in the walking area), faeces should be removed immediately. If patients urinate inside the building or on any hard surface outside the building, the urine should be removed and the floor cleaned, disinfected and dried.

5.12.4. Hygiene of instruments and equipment used in the laboratory

All instruments and equipment must be cleaned, sterilized or disinfected between uses in various laboratory animals.
Materials that are sterilized between uses (surgical instruments and equipment) should be cleaned with soap and water, then disinfected with a 0.5% chlorhexidine solution or equivalent immediately after use. The equipment must then be returned to the warehouse for sterilization.

5.12.5. Bio-waste management

Neutralization of bio-waste is carried out in accordance with the procedure set out in Annex 5.

5.13. Biosafety and biosecurity principles applied at necropsy

5.13.1. Protective equipment

♦ **Lab coats and overalls for practical work in the autopsy room**

Lab coats and overalls are the first barrier of individual protection against contamination, but in the event of an increased risk of contact with liquids, splashing or soaking in blood or other secretions and excretions, they should be protected with waterproof aprons or capes.

Lab coats and overalls should be changed whenever they become visibly dirty and at the end of each day.

Lab coats should only be used in laboratories, not in necropsies.

Overalls are recommended for necropsy activities.

Lab coats and overalls for practical work in the necropsy room should not be worn outside the workplace.

Staff should be aware that taking dirty lab coats and overalls at home for washing could transfer pathogens to the home.

If the uniforms are brought home, they must be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.

♦ **Footwear for the necropsy room**

Washable rubber boots are recommended when performing activities in the necropsy room. At the end of the activities, the boots will be cleaned with water and by vigorous brushing until the complete removal of visible contaminants and decontaminated with a suitable biocide.

♦ **Other personal protective equipment**

The following standard protection measures must be applied in all activities:

- proper hand washing;
- wound coverage;
- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
- protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
- protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or face mask).

Protective clothing should be worn whenever there may be contact with a corpse or when working in the necropsy room (including cleaning).

The size of the protective equipment must be appropriate to the size of the personnel.

♦ **Stages of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.

When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.13.2. Space hygiene

The general hygiene measures described in Chapter 5.4.3 apply.

5.13.3. Management of biological waste and corpses

Neutralization of bio-waste is done according to the procedure in Annex 5.

5.13.4. General procedure for compliance with biosafety rules at necropsy

- The rules included in this procedure will be observed by all persons involved in necropsy.
- Work in the necropsy room is done using protective equipment consisting of: long-sleeved gown, disposable gown, cap / head protection, protective mask, forearm protection, rubber apron, rubber gloves, rubber boots or footwear protection;
- The shoe disinfector will be used at the entrance and exit of the necropsy room;
- It is recommended to move carefully in the space of the necropsy room, there is a danger of slipping on the wet floor;
- It is forbidden to handle and perform necropsy by students of primates, as well as corpses suspected of being diseases of biohazard group 3 and 4;
- It is forbidden to use personal items in the necropsy room (mobile phones, tablets, cameras, video cameras, bibliographic material, bags, etc.);
- It is forbidden to consume food and drinks in the necropsy room and during the necropsy;
- It is forbidden to smoke in the necropsy room and during the necropsy;
- It is forbidden to operate electrical appliances without the consent and direct supervision of teachers or to operate them near water sources; it is forbidden to use any electrical device that has malfunctions or improperly insulated electrical cables;
- It is forbidden to troubleshoot any electrical devices or other installations related to the necropsy room by students or unauthorized personnel;
- It is forbidden to use cutting tools for purposes other than those related to the application of the necropsy technique;
- Any accident resulting from the handling of working tools will be treated as follows (washing with running water, wound asepsis, application of antibiotic powder, application of sterile waterproof dressing, use of an intact rubber glove).
- The use of fixatives for histopathology (formaldehyde), as well as biocidal substances used for disinfection of premises and instruments is done according to the recommendations in the Safety Data Sheet issued by the manufacturer.
- Disposable protective materials, as well as sharp objects used during the necropsy will be stored in appropriate containers for denaturation; it is forbidden to store these materials in the rubbish bins outside the necropsy room.

5.13.5. Procedure for compliance with biosafety rules at the necropsy room building 8

- The rules included in this procedure will be observed by all persons working in the necropsy room – building 8.
- The access in the necropsy room is being made on a separate entrance, on the Eastern side of Building 8.
- Entry into the equipment area (student locker room) is made by stepping onto the shoe disinfectant rubber carpet.
- Students, teaching and technical staff working in the necropsy room will store personal items in the locker rooms and will wear protective equipment consisting of: long-sleeved laboratory gown, disposable gown, medical scrub cap or disposable cap, forearm disposable protection, rubber apron, latex/nitril gloves, rubber boots or disposable protective footwear. Optionally, depending on the specific of the necropsy (suspicion of zoonotic disease), the equipment is completed with a disposable mouth-nose mask or safety goggles/face shield.
- It is forbidden to use the protective equipment intended for necropsy outside the space of the necropsy room.
- The entry to the necropsy room is done by stepping onto the shoe disinfectant rubber carpet.
- After the necropsy is finished, the biological remains are packed in special polyethylene bags for biohazard materials and frozen at -18ºC. The necropsy of large animals is followed by cutting up of the carcass by using the chainsaw machine. The denaturation of biological remains is done by incineration, based on the service contract with specialized companies.
- Disposable protective materials, as well as sharp objects used during the necropsy, will be stored in the appropriate containers in order to be discarded for denaturation; it is prohibited to store these materials in the trash cans outside the necropsy room.
- Work surfaces, floors, containers and instruments used during necropsy are mechanically washed and disinfected. At the end of the working day, the space of the necropsy room is disinfected by using ultraviolet lamps.
- Rubber boots and aprons are washed in warm water to remove biological debris and disinfected.
- After removing the gloves, hands are washed with warm water and soap, followed by hand disinfection.
- The exit of the necropsy room is made by stepping onto the shoe disinfectant rubber carpet.
- The exit of the locker room is made by stepping onto the shoe disinfectant rubber carpet.
- Students are forbidden to handle and perform the necropsy of primates, as well as corpses suspected of diseases from biohazard group 3 and 4.
- The necropsy will be continued only by employed personnel if a zoonotic disease is being suspected during postmortem examination.

- Samples taken in the necropsy room for laboratory examination are transported in sealed plastic boxes.
- It is forbidden to use personal objects in the space of the autopsy room (mobile phones, tablets, cameras, video cameras, textbooks, bags, etc.
- It is forbidden to consume food and beverages in the space of the necropsy room and during the autopsy.
- Smoking is prohibited in the necropsy room and during the necropsy.
- It is forbidden to operate electrical devices, without the consent and direct supervision of teachers or to operate them near water sources; the use of any electrical device with malfunctions or inadequately insulated electrical cables is prohibited.
- It is forbidden to troubleshoot any electrical devices or other installations related to the necropsy room by students or unauthorized personnel.
- It is forbidden to use cutting tools for purposes other than related to the application of the necropsy technique.
- It is recommended to move carefully in the space of the necropsy room, because of the danger of slipping on the wet floor.
- Any accident resulting from the handling of work tools will be notified to the teacher in order to provide first aid (washing with running water, wound asepsis, application of antibiotic powder, application of sterile waterproof dressing, use of an intact rubber glove).

5.13.6. Procedure for compliance with biosafety rules in field necropsy

- The rules included in this procedure will be observed by all persons working in in field necropsy.
- Students, teaching and technical staff involved in a field necropsy (farms) will wear protective equipment consisting of: protective overalls, forearm disposable protection, rubber apron, latex/nitril gloves, disposable protective footwear. Optionally, depending on the specific of the necropsy (suspicion of zoonotic disease), the equipment is completed with a disposable mouth-nose mask or safety goggles/face shield.
- To prevent contamination of the environment, the necropsy will be performed as close as possible to the place of cadaver disposal (burial pit, incineration pit, composting pile), on polyethylene foil, in order to prevent the leakage of biological fluids.
- Biological remains are packed after finishing the necropsy; the place of necropsy is disinfected with disinfectant solutions. Disposable protective materials are packed in special polyethylene bags for biohazard materials. The denaturation of biological remains is done by incineration, based on the service contract with specialized companies.
- The contact of live animals with cadavers or biological remains is avoided.

- The removal of protective equipment will be follwed by washing of hands with water and soap and hand disinfection.
- Students are forbidden to handle and perform the necropsy of cadavers suspected of diseases from biohazard group 3 and 4.
- The necropsy will be continued only by employed personnel if a zoonotic disease is being suspected during postmortem examination.
- Samples taken in the field necropsy for laboratory examination are transported in sealed plastic boxes (isothermal bags).
- It is forbidden to consume food and beverages during the necropsy.
- Smoking is prohibited during the necropsy.
- It is forbidden to use cutting tools for purposes other than related to the application of the necropsy technique.
- Any accident resulting from the handling of working tools will be notified to the teacher in order to provide first aid (washing with running water, wound asepsis, application of antibiotic powder, application of sterile waterproof dressing, use of an intact rubber glove).

5.14. Biosafety and biosecurity principles applied in the Belciugatele Didactic Station

5.14.1. General presentation

Location: Belciugatele commune, Călărași county
Distance from the faculty: 20 km
Income species: cattle, palmipeds

5.14.1.1. Cattle teaching-farm Moara Domeasca

A total of 60 head of cattle, divided into two stables:

- Stables 1 - 27 dairy cows, 12 heifers, 1 bull

The stable has 26 individual resting areas, 4 weaning boxes, scraper plow, automatic waterers, restraint system at the feeding front, septic tank for manure.

- Stable 2 - 19 cattle, 1 bull, 5 ponies and 2 horses

The stable has 3 boxes with outdoor paddle, 11 boxes inside, 10 calf beds 0-4 months.

- Milking parlor with 3 stations.

5.14.1.2. Palmepid farm

The Palmiped Farm Moara Domnească was populated in 2008 with an existing palmipeds at Baneasa Farm.

- The basic activity is the breeding, reproduction, selection of palmipeds (bird breeding), original biological material, represented by a collection of 10 breeds - 6 duck lines, 4 goose lines and incubation of eggs from them in order to select and preserve the only genetic background of palmipeds from Romania.

- The farm has 2 adult bird breeding halls with an area of 250 square meters each, compartmentalized with wire boxes to keep lots on breeds and lines. Hall no. 1 is divided into 10 boxes and hall no. 2 is divided into 12 boxes.
- The farm has its own incubation station with egg reception room, egg storage room, incubation room, equipped with an incubator of 13000 eggs, egg scoop, hatching room with an hatcher.
- The farm also has 2 monobloc containers equipped with water, electricity, and fans where the one-day buds are kept, from hatching to marketing.

Goose population, March 2020

1. Toulouse - 30 heads
2. Emden - 45 heads
3. Chinese white- 50 heads
4. Chinese chestnut - 115 heads

TOTAL GOOSE - 240 HEADS

Duck population, March 2020

1. White leash - 55 heads
2. Black leash - 60 heads
3. Leseasca B1 - 55 heads
4. Beijing - 330 heads
5. Khaki Campbell - 235 heads
6. Indiana Runners - 135 heads

TOTAL DUCKS- 870 HEADS

5.14.2. Identification, registration and movement of animals

These actions are regulated by normative acts elaborated by National Sanitary Veterinary and Food Safety Authority and are relevant for the development of commercial activities within the farm.

5.14.3. Educational activities

In the farm, different types of teaching activities are organized that are in accordance with the specifics of the practical work planned in the clinical disciplines.
The content of these activities is well planned and determined in advance. They mainly consist of prophylactic actions (vaccination, blood sampling), hoof hygiene, transrectal examinations, castration and care of newborns.
Students are also involved in caring for sick animals.
Students should wear overalls and waterproof rubber boots for use on the farm.
Personal footwear should not be worn on the farm.
Students should use their own thermometers and stethoscopes for clinical activities. These materials should be cleaned regularly with soap and water and disinfected with hand sanitizers.

Hygiene of the equipment, instruments and spaces where the teaching activities take place involves the use of the general hygiene measures described in Chapter 5.4.

5.15. Principles of biosafety and biosecurity applied in the Emergency Veterinary University Hospital (VTH)

The emergency university hospital, operational on March 1, 2020, benefits from modern hospitalization spaces, both for critical patients and for stable ones (outpatient hospitalization), who need permanent care as well as an area of isolation, dedicated to the management of infectious-contagious cases. This area is served by consulting rooms, hospitalizations (isolation hospitalizations) and completely separate access to the clinic circuit. Access to this area is through specific filter systems. The intensive care unit (ATI-dogs, ATI-cats) has specific equipment (cages of various sizes adapted to the species and size, connected to the centralized oxygen source or oxygen concentrator, individual heating sources) and intensive therapy monitoring technique (infusion pumps and injectors, monitoring of complete vital functions).

5.15.1. Protective equipment

- **Uniforms for clinical activities**

Uniforms for clinical activities should not be worn outside the hospital.
Clinical uniforms should be protected with waterproof aprons or capes in case of increased risk of contact with contaminated liquids, splashing or soaking with blood or other secretions and excretions.
Uniforms should be changed whenever they become visibly dirty or contaminated and at the end of each day.
Staff should be aware that taking dirty uniforms home for washing could transfer pathogens from the clinic to the home.
If the uniforms are brought home, they must be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.
Uniforms should be washed at work in warm water with detergent, along with other dirty laundry resulting from clinical activities. Large clinics should have several washing machines, which should be used separately for washing uniforms and for washing laundry from animals (blankets, blankets, rugs, etc.). Clinical uniforms should be washed at the end of each day and whenever they become visibly dirty.
Uniforms specially designed for this activity must always be worn for surgery (sterile disposable lab coats). These uniforms should not be worn during other procedures or during patient handling.

- **Footwear for the clinic**

To avoid accidents, it is recommended to wear closed-toe shoes, which reduce the risk of injury from sharp objects, scratches caused by animals and to protect the feet from contact with potentially infectious materials such as feces, urine, secretions, excretions and other biological substances.
To prevent the spread of biohazardous materials from contaminated floors to other areas of the clinic, disposable footwear or footwear protections are required.
These may be necessary for staff when patients with infectious diseases are kept in boxes or paddocks directly on the floor or if they may contaminate the floor (animal with severe diarrhea). Disposable footwear must be

removed when leaving the contaminated area and disposed of in containers intended for these types of waste or stored in the contaminated area until they are collected in special garbage bags.

♦ **Other personal protective equipment**

The following standard protective measures shall be applied in all clinical activities and whenever contact with animals, their breeding environment and the biological samples collected from them are applied:

- proper hand washing;
- wound coverage;
- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
- protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
- protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public.

Protective clothing should be worn whenever there may be contact with an animal or when working in a clinic (including cleaning).

The size of the protective equipment must be appropriate to the size of the personnel.

Clients should wear the same protective equipment as veterinarians if they request access to clinics where there is a risk of infection..

♦ **Stages of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.

When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.15.2. Hygiene of instruments, equipment and spaces

General cleaning and disinfection protocol

Whenever disinfectants are used, gloves and proper clothing must be worn. When disinfection is performed, if there is a risk of splashing, additional protective equipment (face mask / visor, goggles, waterproof clothing and boots) should be worn.

All disinfection must be removed before disinfection. Dirty contaminants and urine significantly reduce the effectiveness of most disinfectants. If washing with a hose, care must be taken to minimize the possibility of aerosolization of pathogens.

Wash cages, including walls, doors and drinking and feeding vessels, with water and detergent or soap; brushing is always necessary for the dislocation of residues that prevent the action of disinfectants. After completing the mechanical cleaning, to prevent dilution of disinfectant solutions, the cage is allowed to drain and dry for a sufficient time. To remove detergent residues, the cleaned area must be rinsed thoroughly.

The disinfectant solution is sprayed in the cleaned and dried cage, including on the walls and doors. A 2.5% sodium hydroxide solution may be used, which must remain in contact with the surfaces for 15 minutes, especially if an infectious agent is suspected.

Excess disinfectant should be removed with water. After the end of the period of action, the disinfectant solution must be removed from all surfaces of the cage and subsequently a new patient can be accommodated.

After the disinfection is completed, the staff takes off their protective clothing and washes their hands.

All multi-use areas where animals are examined or treated must be cleaned and disinfected after use by responsible persons regardless of the patient's infectious condition. Cleaning tools must be cleaned and disinfected after use (including handles).

Footwear disinfectors

Biocides in disinfectors are changed every morning by the caregiver. Disinfectant mats should be cleaned whenever they contain excessive amounts of bedding or dirt and reloaded with disinfectant when dry; this is the responsibility of all people working in the area (students, technical staff and clinicians).

Staff and students must use the mats each time they meet on the road. Disinfectant solutions can damage shoes if they are not waterproof.

Disinfection protocol for instruments and equipment

All instruments and equipment must be cleaned, sterilized or disinfected between uses in different patients.

Materials that are sterilized between uses (surgical instruments and equipment) should be cleaned with soap and water, then disinfected with a 0.5% chlorhexidine solution or equivalent immediately after use. The equipment must then be returned to the warehouse for sterilization.

Stethoscopes

Cleaning: wipe with damp paper.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.

Personal stethoscopes may be used in animals in non-contagious areas, but should be regularly cleaned and disinfected (recommendation: at the beginning and end of the day). Immediate cleaning and disinfection is required when the stethoscopes are visibly dirty.

- Individual stethoscopes, owned by FVM, are assigned to each high-risk contagious patient (class 4). They are stored at patients' stands during hospitalization and cleaned, then disinfected after discharge.

Thermometers

Cleaning: wipe or wash with soap to remove raw faeces.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.

Glass thermometers are prohibited in FVM to reduce the potential risks associated with exposure to glass and mercury. Electronic thermometers are used instead.

Personal electronic thermometers can be used on animals in non-contagious areas, but must be cleaned and disinfected after each patient.

Probe thermometers used for continuous temperature monitoring (eg anesthesia or intensive care) should be cleaned and disinfected immediately after use.

Immediate cleaning and disinfection of thermometers is mandatory when they are visibly dirty.

Individual thermometers should be assigned to each high-risk contagious patient (class 4)

They are stored at the place of hospitalization of patients throughout the hospitalization period and cleaned, then disinfected after discharge.

Outpatient examination spaces

The examination rooms are thoroughly cleaned and disinfected daily by the technical staff, after each patient and if they are visibly dirty.

Admission in accommodation spaces

The caretaker cleans the accommodation spaces daily and puts on fresh bedding.

Appropriate clothing should be used in the type of paddling sanitation activity (overalls and protective clothing should be used whenever necessary).

Garbage resulting from the sanitation of these spaces must be stored in the dumpsters in the area specially designed for this purpose. During the transport of the garbage to the storage area, it is prevented to spread it on hallways or alleys. Patients' contact with rubbish bins should be avoided. Dedicated rubbish bins are used for patients at risk of infection (classes 3 and 4).

The cleaning tools used for accommodation spaces in class 1-2 must be cleaned and disinfected once a week. Cleaning tools used for Class 3 and 4 accommodation spaces must be cleaned and disinfected after each use.

General procedure for cleaning a vacant accommodation space

The accommodation spaces used for non-contagious animals are cleaned and disinfected after each patient.

The accommodation spaces used for contagious animals will be cleaned using the general cleaning and disinfection protocol. The caregiver should empty, clean and disinfect the accommodation space as soon as possible, but after cleaning the non-contagious accommodation spaces. The accommodation spaces is considered a contagious area until disinfection and as a consequence, no animal is allowed in it before its complete cleaning and disinfection.

5.15.3. Patient hygiene

All animals must be housed in clean cages/rooms. In this regard, caregivers remove faeces and dirty bedding daily from cages / rooms and alleys. If a stand is dirty outside of caregivers' working hours, students and / or clinicians should remove faeces and wet bedding and add clean bedding if necessary.

When an animal leaves the cage/room, the person responsible for discharging the patient informs the caregivers that they must clean and disinfect the cage/room before a new animal can be housed in it. After doing so, the caregiver informs the responsible person of the completion of the action. In the case of newborns, patient hygiene is of paramount importance and therefore wet feces or bedding should be disposed of immediately by participating students or caregivers.

Drinkers and drinking vessels / buckets should be cleaned and disinfected between patients.

Feeding vessels must remain clean throughout the hospitalization of animals and must be cleaned and disinfected between patients. If an animal has not eaten, this should be reported to the clinician and the feed should be removed from the feeding vessel.

The animals must be as clean as possible, excretions or secretions from the animal must be removed.
The environment around the cage/room must be clean, tidy and neat. Medicines and materials should not be left lying, scattered outside the cage/room. Staff and students must remove materials used in medical activities and leave the location in its original condition.
If patients defecate outside their cage/room (whether inside or outside a building), faeces should be removed immediately. If the animal has diarrhea syndrome, the faeces must be removed as soon as possible and the floor cleaned, disinfected and dried.

5.16. Biosafety and biosecurity principles applied in the University Center for Experimental Medicine (UCEM)

5.16.1. Date generale

UCEM, located on the campus of the faculty, has an utile area of 1100 m^2, with accommodations for healthy rent and companion animals (ground floor), as well as laboratory animals (first floor).
The Center ensures the conditions for housing animals, necessary for carrying out teaching and research activities in accordance with the regulations in force, respecting animal welfare, but also ethical principles involving the use of animals in experimental procedures, in accordance with Directive 2010/63 / EU of the European Parliament and of the Council On the protection of animals used for scientific purposes, transposed into national law by Law 43/2014, as well as the rules adopted by the National Sanitary Veterinary and Food Safety Authority (Order No. 97 of 01/09/2015 on the veterinary authorization procedure of units for the use, breeding and supply of animals used for scientific purposes, as well as the veterinary health authorization procedure for projects involving the use of animals in procedures).
The FMV Center provides accommodation for dogs, cats, pigs, horses, large and small ruminants, birds, rabbits, mice, rats, guinea pigs, but also aquatic animals. The objective is intended as a unit for breeding, care and use for scientific purposes of laboratory animals, being sanitary-veterinary as a unit for using, breeding and supplying animals used for scientific purposes (Veterinary Sanitary Authorization number 277 / 30.06.2016) .
The Center also has a veterinarian responsible for animal welfare, a physician who has a permanent collaboration with the Ethics Commission responsible for evaluating projects that use animals in procedures.
In this Center, there is a judicious organization of the space and activities, having attached, besides the accommodation spaces by species (for the species listed above) a Laboratory, a Room dedicated to Experimental Medicine, a Quarantine Space for newly brought animals, two Rooms evacuation of biological materials (one on each floor), a Euthanasia-Necropsy room, a Refrigeration Room and
General equipment includes horse boxes, specific equipment for housing large and small ruminants, pigs, cages for dogs and cats, ventilated cages for rats, mice, guinea pigs, rabbits, birds, cage changing station under laminar flow and non-contact hand sanitizer, Unit with individual cages for recovery of rats, Anesthesia machine for small laboratory animals, autoclave.

5.16.2. Technological process and technological flows

The technological process for carrying out the activity refers especially to:
- personal entry / exit (through the sanitary filter);
- personal equipment / de-equipment (in the sanitary filter);
- purchases of animals (these will be quarantined);
- animal care (by trained staff);
- animal approach and restraint (by trained staff);
- killing animals (by trained personnel);
- sanitation of cages, spaces, instruments, etc .;
- administration of substances (by trained staff);
- collection of biological samples (by staff trained in this regard);
- performing surgeries;
- recovery of animals used in research activities;
- removal of dirty bedding and manure (on the ladder intended for this purpose);
- removal of corpses (on the ladder intended for this purpose).

Technological flows are delimited by sanitary barriers created both constructively (sanitary filters on both floors, closing elements through partition walls, ventilation and decontamination equipment) and functionally (procedures governing staff access, access and delivery of animals, respectively entrances and outputs). The flows are applied to people, animals, food and waste and thus the unit allows the controlled management of:

- *movement of personnel, materials and equipment*. The flow of staff (researchers, veterinarians, technicians and caregivers) and research equipment starts either from the administrative area or from the staff filters (located in the Center on each floor), where the change of street clothes with work clothes takes place. Access to productive areas is controlled, depending on the situation and dependent on the activity at the time; the activity in the dirty area or the passage from one species to another is fragmented by decontamination and the change of the protective clothing with another clean one. When leaving the units, for biosafety reasons, there is sanitation, showering and changing work clothes with street clothes.

- *animal movement*. The animals populate the speakers of the Center, after a previous cleaning and decontamination, respecting the principle of population and total depopulation. Biosafety measures must also be maintained due to the requirements of research projects.

- bedding. The bedding and fibrous fodder are temporarily stored in the warehouse called Asternut, located near the experimental guinea pig unit; from here, fibrous fodder and bedding reach the animals' shelters and pens. To prevent degradation, wetting and mold, fibrous feed is stored on wooden pallets in a semi-cylindrical structure with controlled ventilation.

- *feed / feed flow*. The purchased fodder is temporarily stored in the space called Bucatarie-Furaje, located in the vicinity of the experimental mouse-rat units (between these two units-left side). Distribution is made from the feed store in clean containers. The warehouse can be easily cleaned, disinfected and disinsected, being a clean, dry and cool room, with an inventory that is reduced to a minimum, respectively to the metal shelves fixed to the walls..

- litter flow. Dirty bedding and manure are regularly discharged to cattle and horses and at the end of the cycle in the case of pigs. Manure is temporarily stored on the manure platform of the experimental units; the storage

period is four, a maximum of six months, depending on the amount of rubbish accumulated and the possibilities for its disposal. For small animals, where the experimental units are only found upstairs, the dirty bedding can be temporarily stored in the used bedding storage area, located between the Cold Room space (left) and the biological material disposal area (right).

- *personal filters area and toilets.* The sanitary group also acts as a filter for staff and allows hygiene, change of street clothes and work clothes, in order to reduce the risk of introducing etiological agents of diseases. At the end of the working hours, the space allows you to take off your work clothes and put on your street clothes.

- *animal enclosures.* The center has premises for the accommodation of canines, felines, pigs, horses, large and small ruminants, birds, rabbits, mice, rats, guinea pigs, but also aquatic animals. The corridors provide access to the different areas of the unit and contribute to the generation of an efficient flow; they are configured around the perimeter to facilitate the movement of personnel, animals and equipment such as feed trolleys, litter and other materials.

- *Experimental Medicine Room -* it is a room that allows the use of instruments necessary to carry out specific research procedures; small surgery, substance administration, sampling, anesthesia and recovery of animals used in procedures can be performed here. All procedures that could cause alertness or stress are carried out in this Room, as an animal that is being manipulated or in difficulty can send alarming signals to congeners, which can lead to unnecessary stress. Thus, especially in guinea pigs and rabbits, the transfer takes place, even for relatively minor procedures, such as parenteral administration of medication or blood sampling. In the case of mice and rats, minor procedures are performed in the rearing chamber.

- *Laboratory Room -* Located on the ground floor, on the left side, between the Experimental Medicine Room and the Aquatic Animals Room, it is equipped with specific laboratory equipment, necessary for working with laboratory animals. The activities carried out refer to research, analysis, collection / processing of biological materials from animals, centrifugation, cell cultures, etc..

- *access alleys.* They allow the access of workers, researchers, as well as the transfer of animals from one box to another, respectively their handling to the areas of weighing or intervention (labor), allotment and reloting, delivery and / or reception of animals used in procedures.

- *Quarantine Hall.* Represents the area for receiving clean materials and is located on the left side of the unit, in the vicinity of the Canine Accommodation Hall, on the ground floor; this area is used for the reception of clean materials (feed, clean bedding, biological products, medicines and other clean materials) that are necessary for the activities of the unit. Also in this area takes place the reception, the inspection of the animals and the conformity of the transport documents is verified, following that, later, the animals will be introduced in the quarantine room; the reception / delivery area benefits from a minimum inventory, which makes it possible to carry out the activities and the appropriate environmental conditions: ventilation, light and adequate temperature. Also, if the research project requires the transfer of the animals to partner units, the animals are placed in the quarantine room until their delivery, and the animals, once transferred, do not return to the Center. In quarantine rooms the principle of total population and depopulation is practiced. Biological rest is ensured between two populations, following the cleaning, washing and decontamination operations.

- *Sterilization room,* positioned between the Sanitation Hall and the Laboratory. The room has adequate ventilation, which allows it to maintain an environment conducive to human physical activity.

- Exhaust rooms for biological materials, one on each floor at the end and right side, ensures the transfer of dirty materials, corpses or the evacuation of dirty bedding; When disposing of dirty materials, bedding, manure and carcasses of laboratory animals, the procedures for the disposal of hazardous and non-hazardous waste, in accordance with the procedures on waste management.
- Euthanasia / Necropsy Room. Here the dead animals are collected, identified, recorded and subjected to post-mortem examination or placed in the freezing facilities (Refrigeration Room-located in the immediate vicinity) until the time of examination.
- waste management and neutralization. Manure and dirty bedding from the animal cages are collected in the container of the shavings exchange station, from where, in a polyethylene bag, it is transferred to the hermetically sealed dumpster. The waste is disposed of at the latest at the end of the day the shavings were exchanged and transferred to the incinerator or to the temporary manure storage platform; during the day, they are temporarily stored in closed bins. Hazardous, biohazardous waste and hazardous materials are collected in separate containers from where they are also handed over or transferred to the authorized waste neutralization company.

5.16.3. Biosafety principles regarding the hygiene of equipment, spaces and animals

5.16.3.1. Hygiene of the protective equipment, footwear, personal protective equipment

- **Protective equipment**

Lab coats and uniforms intended for activities inside the UCEM must not be worn outside.
Lab coats and work uniforms should be protected with waterproof aprons or capes in the event of an increased risk of contact with contaminated liquids, splashing or soaking with blood or other secretions and excretions.
Lab coats and uniforms should be changed whenever they become visibly dirty or contaminated and at the end of each day.
Staff should be aware that taking dirty lab coats and uniforms at home for washing could transfer pathogens from the Center to the home.
If lab coats and uniforms are brought home, they should be kept in a plastic bag until they are placed in the washing machine and washed separately from other laundry.
Lab coats and uniforms should be washed at work in warm water with detergent, along with other dirty laundry resulting from activities in the center.
The lab coats and uniforms of the Center must be washed at the end of each day and whenever they become visibly dirty.

- **Footwear**

To avoid injury, it is recommended to wear closed-toe shoes, which reduce the risk of injury from sharp objects, scratches caused by animals and to protect the feet from contact with potentially infectious materials such as feces, urine, secretions, excretions and other biological substances.
Disposable footwear or boots are required to prevent the spread of biohazardous materials on contaminated floors in other areas of the Center.

Disposable bins should be removed when leaving the contaminated area and disposed of in containers intended for these types of waste or stored in the contaminated area until collected in special garbage bags.

♦ **Other personal protective equipment**

The following standard protection measures shall apply to all activities in the UCEM and whenever it comes into contact with animals, their breeding environment and the biological samples collected from them:

• proper hand washing;
• wound coverage;
• use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
• protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood splashes, secretions, excretions or other pathological fluids resulting during activities);
• protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, veterinary staff, students and the public.
Protective clothing should be worn whenever there may be contact with an animal or when working in the center (including cleaning).
The size of the protective equipment must be appropriate to the size of the personnel.

♦ **Stages of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.
When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.16.3.2. Hygiene of instruments, equipment and spaces

General cleaning and disinfection protocol

Whenever disinfectants are used, gloves and proper clothing must be worn. When disinfection is performed, if there is a risk of splashing, additional protective equipment (face mask / visor, goggles, waterproof clothing and boots) should be worn.
All disinfection must be removed before disinfection. Dirty contaminants and urine significantly reduce the effectiveness of most disinfectants. If washing with a hose, care must be taken to minimize the possibility of aerosolization of pathogens.
Wash cages, including walls, doors and drinking and feeding vessels, with water and detergent or soap; brushing is always necessary for the dislocation of residues that prevent the action of disinfectants. After completing the mechanical cleaning, to prevent dilution of disinfectant solutions, the cage is allowed to drain and dry for a sufficient time. To remove detergent residues, the cleaned area must be rinsed thoroughly.

The disinfectant solution is sprayed in the cleaned and dried cage, including on the walls and doors. A 2.5% sodium hydroxide solution may be used, which must remain in contact with the surfaces for 15 minutes, especially if an infectious agent is suspected.

Excess disinfectant should be removed with water. After the end of the period of action, the disinfectant solution must be removed from all surfaces of the cage and subsequently a new patient can be accommodated.

After the disinfection is completed, the staff takes off their protective clothing and washes their hands.

All multi-use areas where animals are examined or treated must be cleaned and disinfected after use by responsible persons regardless of the patient's infectious condition. Cleaning tools must be cleaned and disinfected after use (including handles).

Footwear disinfectors

Biocides in disinfectors are changed every morning by the caregiver. Disinfectant mats should be cleaned whenever they contain excessive amounts of bedding or dirt and reloaded with disinfectant when dry; this is the responsibility of all people working in the area (students, technical staff and clinicians).

Staff and students must use the mats each time they meet on the road. Disinfectant solutions can damage shoes if they are not waterproof.

Disinfection protocol for instruments and equipment

All instruments and equipment must be cleaned, sterilized or disinfected between uses in different patients.

Materials that are sterilized between uses (surgical instruments and equipment) should be cleaned with soap and water, then disinfected with a 0.5% chlorhexidine solution or equivalent immediately after use. The equipment must then be returned to the warehouse for sterilization.

Stethoscopes

Cleaning: wipe with damp paper.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.

Personal stethoscopes may be used in animals in non-contagious areas, but should be regularly cleaned and disinfected (recommendation: at the beginning and end of the day). Immediate cleaning and disinfection is required when the stethoscopes are visibly dirty.

- Individual stethoscopes, owned by FVM, are assigned to each high-risk contagious patient (class 4). They are stored at patients' stands during hospitalization and cleaned, then disinfected after discharge.

Thermometers

Cleaning: wipe or wash with soap to remove raw faeces.

Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.

Glass thermometers are prohibited in FVM to reduce the potential risks associated with exposure to glass and mercury. Electronic thermometers are used instead.

Personal electronic thermometers can be used on animals in non-contagious areas, but must be cleaned and disinfected after each patient.

Probe thermometers used for continuous temperature monitoring (eg anesthesia or intensive care) should be cleaned and disinfected immediately after use.

Immediate cleaning and disinfection of thermometers is mandatory when they are visibly dirty.

Individual thermometers should be assigned to each high-risk contagious patient (class 4)
They are stored at the place of hospitalization of patients throughout the hospitalization period and cleaned, then disinfected after discharge.

Accommodation spaces

The caretaker cleans the accommodation daily.
Appropriate clothing should be used in the type of sanitation activity (overalls and protective clothing should be used whenever necessary).
Garbage resulting from the sanitation of these spaces must be stored in the dumpsters in the area specially designed for this purpose. During the transport of the garbage to the storage area, it is prevented to spread it on hallways or alleys. Avoid contact of animals housed in the center with rubbish bins. Dedicated litter bins are used for animals at risk of infection (classes 3 and 4).
Cleaning tools used for Class 1-2 animals should be cleaned and disinfected once a week. Cleaning tools used for Class 3 and 4 animals must be cleaned and disinfected after each use.
The hallways should be cleaned daily and disinfected once a week.

General procedure for cleaning a vacant accommodation space

The accommodation spaces used for non-contagious animals are cleaned and disinfected after each patient.
The accommodation spaces used for contagious animals will be cleaned using the general cleaning and disinfection protocol. The caregiver should empty, clean and disinfect the accommodation space as soon as possible, but after cleaning the non-contagious accommodation spaces. The accommodation spaces is considered a contagious area until disinfection and as a consequence, no animal is allowed in it before its complete cleaning and disinfection.

5.16.3.3. Hygiene of the UCEM animals

For basic hygiene and reducing the pressure of the infection, it is of major importance that the animals in the UCEM are housed in clean cages. Before housing a new animal in a cage, feces, blood, urine, all other organic materials and dirty objects should be removed. The cleaning staff cleans the halls every day. Patient hygiene is extremely important for young people. Therefore, faeces or wet bedding should be removed immediately and the cage disinfected by technical personnel.
When an animal is removed from the Center, the cage should be cleaned as soon as possible.
After removing the infected animals (classes 3 and 4), the cages should be emptied, cleaned and disinfected as soon as possible. The cage is considered a contagious area until disinfection is performed. Thus, no animal should be housed in it before complete cleaning and disinfection.
Cages used for non-contagious animals are regularly emptied, cleaned and disinfected between uses in different animals.
Water vessels should be cleaned regularly (as often as necessary, but at least twice a day) and should be cleaned and disinfected between uses on different animals. The presence of water in the vessel must be checked regularly; the vessel should be refilled with fresh water at least twice a day after cleaning.
Food containers should be cleaned regularly (as needed, but at least twice a day) and should be cleaned and disinfected between uses on different animals. Appetite should be noted in the daily care log and uneaten food should be disposed of in the default waste container.

The animals of the Center should be kept as clean as possible, all excretions or secretions should be removed as soon as they have been observed. Dirty animals should be washed / cleaned regularly. The environment around the cage must be clean, and tidy, i.e. without medicines or surrounding materials, without bedding outside the cage.
If animals defecate outside a cage (either inside the building or in the walking area), faeces must be removed immediately. If animals urinate inside the building or on any other area outside the building, the urine must be removed and the floor cleaned, disinfected and dried.

Responsibilities

- caretakers change dirty bedding from cages and remove manure, sanitize cages and accommodation, sanitize drinking containers, feed and water animals, approach and restrain animals;
- the veterinarian receives the animals, supervises the work of the caretakers, prepares reports, monitors the health of the animals, monitors the recovery of the animals after surgery, euthanizes the animals, performs various procedures (thermometry, administration of substances, blood collection, urine, etc.) operates in the following registers: the register of consultations and treatments, the register of mortality, the register of laboratory animals (for each species), the register of euthanized animals, the register of animals used in procedures.
- the designated veterinarian organizes the activity within the center, supervises the activity of the veterinary technician and the caretakers, monitors the animal welfare, monitors the animal health, operates in the register of authorized projects, ensures the proper functioning of the technical equipment within the center.
- the researchers elaborate research projects and follow / carry out the research activity.

5.16.3.4. Biosafety Levels for Experimental Centers (Animal facilities)

Depending on the risk group of the microorganisms handled, the Biobases can be classified into 4 levels of biosafety.
Biobase security levels - summary of biosafety practices and equipment:
Risk group 1
Safety practices and equipment
- limited acces
- protective clothing and gloves

Risk group 2
Level 1 plus internships:
- danger warning signs
- HSB class I or II for aerosol generating activities
- decontamination of residues and cages before washing

Risk group 3

Level 2 internships, plus:
- controlled access
- HSB and special protective clothing for all activities

Risk group 4
Level 3 plus practices:
- strictly limited access
- changing clothes before entering
- HSB class III or positive pressure protective suits
- shower at the exit
- decontamination of all waste before disposal

HSB- Biological safety hood
BSC-Biological Safety Cabinet.

5.17. Biosafety and biosecurity in equine isolation facility

5.17.1. Biosafety and biosecurity of personnel

5.17.1.1. Hand hygiene

♦ **Hand hygiene should be done in the following situations:**
- Before and after handling each patient;
- After any contact with contaminated blood, body fluids, secretions, excretions and objects, whether or not gloves have been worn;
- Immediately after removing the gloves;
- Between different procedures in the same patient, to prevent cross-contamination of different parts of the body;
- After handling samples or laboratory cultures;
- After cleaning cages, paddocks, tables or any contaminated surface;
- Before meals, breaks, smoking or leaving work;
- Before and after the use of toilets (toilets);

♦ **Recommended hand washing technique:**
- Wet hands and forearms with warm water;
- Put ~ 3-5 ml (1-2 complete pumps) of soap in the palm of your hand;
- Strongly rub each face of the hands beyond the wrist for 10-30 seconds, rub each finger individually and between the fingers, under the rings and nails;
- Rinse your hands under running hot water until all soap residue is removed;
- Dry your hands with a disposable paper towel or in a hot air dryer.

♦ **Recommended technique for using a hand sanitizer:**
- Pour an appropriate amount of disinfectant into the palm of your hand;

- Rub the disinfectant with the fingertips of the opposite hand, then spread it all over the hand;
- Repeat the procedure with the opposite hand;
- Rub both hands until dry, without rinsing.

♦ If it is not possible to wash your hands immediately, wet wipes with alcohol or other sanitizing products can be used until access to hot water and soap.

♦ FVM staff and students working directly with equine or handling biological samples are encouraged to keep their nails short and not wear jewelry on their fingers or hands.

♦ Before starting work, all lesions on the skin of the hands and forearms should be covered with a waterproof bandage.

5.17.1.2. The protective equipment and street clothes higiene

♦ **Street clothing and footwear**

Street clothing and footwear (capes, jackets, coats, boots, etc.) should not be introduced / stored in isolation room. Street clothing and footwear must be stored in lockers located outside the isolation area.

♦ **Overalls for isolation facility**

Access to the isolator is done only with disposable protective equipment.

♦ **Footwear**

To avoid injury, it is recommended to wear closed shoes (washable rubber boots with metal dome covered with disposable plastic protectors), which reduce the risk of injury from sharp objects, scratches caused by animals and to protect the feet from contact with potentially infectious materials such as feces, urine, secretions, excretions and other biological substances. In order to prevent the spread of biohazardous materials from contaminated floors to other areas of the clinic, disposable footwear or footwear protections are required. These may be necessary for staff when patients with infectious diseases are kept in boxes or paddocks directly on the floor or if they may contaminate the floor (animals with severe diarrhea). Specially designated footwear should also be used around stables for horses or other animals known to carry infectious agents, such as *Salmonella*. Disposable footwear must be removed when leaving the contaminated area and disposed of in containers intended for this type of waste or stored in the contaminated area until it is collected in special garbage bags.

♦ **Other personal protective equipment**

The following standard protection measures shall apply to all clinical activities and to each contact with animals, their breeding environment and the biological samples collected from them:

- proper hand washing;
- wound coverage;
- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;

- protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
- protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public.
The disposable protective clothing must be worn whenever entering the isolator, throughout the accommodation period of an animal at risk of infection.
The size of the protective equipment must be appropriate to the size of the personnel.
Clients should wear the same protective equipment as veterinarians if they request access to clinics where there is a risk of infection.

♦ **The steps of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.
When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.17.1.3. Securing sharp objects

♦ **The basic principles of safety when handling sharp objects are:**

- The person who generates the sharp objects is responsible for their safe disposal;
- Sharp objects are not passed from hand to hand;
- Sharp containers are replaced when full (not recycled);
- Children and animals must not have access to containers for sharp objects;
- Sharp containers are not made available to animals.

In veterinary medical practice, among the most common accidents are punctures with syringe needles, following improperly performed injections. The utmost care must be taken to reinsert the needle into the protective cap. If this operation is not necessary, the used needles are thrown directly into the sharp object container, using the device on the lid of the container to detach the needle. As far as possible, the needles should not be removed from the syringe by hand. Also, the caps of the needles are not removed with the help of the teeth.
Sharp containers are the safest and most economical way to collect for the destruction of needles, scalpel blades and other sharp objects and should be placed in each area for animal care. Sharp objects must not be transferred from one container to another. Needle cutters before disposal should not be used as they increase the risk of aerosolization of the contents, which may be harmful to humans.

5.17.1.4. Biosafety, biosecurity and hygiene measures of equines isolated

- **Biosafety and biosecurity**

The care of sick equine and the educational process of teaching them to students obviously require much more frequent, longer-lasting contacts with more patients than routine veterinary medical activity. However, it is important to remember that such contacts can contribute to the transmission of infectious and / or zoonotic pathogens. For this reason, in order to limit the risk of nosocomial infections, FVM staff and students should minimize contact with isolated equine.

Staff and students who come into contact with suspected / confirmed contagious equine should limit contact with them only to essential maneuvers. Where appropriate, patients should be monitored by observation without physical contact, if possible with the aid of cameras.

Staff and students should enter paddocks only when necessary and should avoid touching or playing with equine when passing by.

Whenever possible, staff and students should access high biological risk areas only after visiting areas with minimal biological risk.

- **Hygiene of equines isolated**

In the FVM, more importance must be given to the accommodation conditions offered to patients. Regular hygiene and decontamination of the isolation room is a basic activity that contributes to a significant reduction in infectious pressure. Drinking and feeding vessels must be changed and cleaned regularly. Collected garbage must be stored under strict biosecurity conditions (sealed yellow bags).

The isolation room must be clean, tidy and neat, without unduly stored medicines or materials, without bedding stored outside the paddock and without the personal belongings of students or FVM staff. Staff and students must order all materials used and properly dispose of all waste, leaving the workspace in proper condition before leaving the premises.

5.17.1.5. Measures for the protection of personnel who sanitize the isolation room

When performing decontamination operations, use the overalls, protective mask, visor or goggles, and boots with disposable plastic protection.

Personnel performing cleaning activities must be trained, have adequate protective equipment and use cleaning and sanitation products in accordance with the product data sheet.

Mechanical cleaning / disinfection should prevent contact of damaged skin and mucous membranes with blood residues or other biological fluids. Skin lesions should be protected with a waterproof bandage.

At the end of the disinfection, the operator removes his protective equipment and washes his hands.

5. 17.1.6. Other biosafety, biosecurity and personal hygiene measures

- **Eating and drinking**

Consumption and storage of food and drink in premises intended for the examination, treatment or accommodation of animals is not permitted. Staff and students are also prohibited from eating, drinking or storing food in the isolation area.

5.17.2. Biosafety and biosecurity of the isolation area

5.17.2.1. Cleaning and disinfection of equipment and work surfaces

All work surfaces and equipment must be cleaned immediately after use or whenever necessary.
Dust and aerosols should be avoided during surface cleaning, as they may contain pathogens for humans and animals.
Dry surfaces should be moistened before sweeping. The areas to be cleaned must be properly ventilated.
Clean items should be kept separate from dirty items. Equipment cleaning and disinfection operations must take into account their destination and the manufacturer's recommendations. Any equipment that must undergo chemical or thermal sterilization or disinfection procedures must first be cleaned. In order to avoid the production of splashes and aerosols, for all water-resistant objects it is recommended that the cleaning and disinfection steps be performed by immersion in the cleaning / disinfectant solution.
For patients in isolation, the use of disposable containers is recommended.
To ensure efficacy, disinfectants should be used according to the manufacturers' instructions, taking into account in particular dilution and contact time. Before returning the reusable materials, equipment and instruments, the disposable sharp parts (needles, scalpel blades, etc.) will be removed and thrown in special, puncture-resistant containers (the yellow plastic boxes).
Do not mix dirty laundry with waste, hay or other bedding, sharp objects or anatomical pieces.
Before returning to the warehouse, the equipment and surgical instruments are cleaned of organic matter, washed and decontaminated.
Before using the disinfectant, large wastes should be removed, avoiding the formation of dust or aerosolization, which could favor the dispersion of pathogens in the environment.
In order to decompose the surface biofilm and remove surface residues that prevent or inhibit the deep disinfection process, it is recommended to clean these areas with water and detergent or soap.
Surfaces cleaned with detergent will be rinsed with plenty of water to remove traces of detergents that could inactivate the disinfectant used.
After complete drying, the surfaces are treated with a disinfectant solution prepared according to the manufacturer's instructions, which is left to act for at least 15 minutes.
Excess disinfectant is removed with water, clean paper towels, mop or squeegee.

The disinfectant should be washed from all surfaces of the cage / paddock or allowed to dry for a sufficient period of time (according to the manufacturer's specifications) before accommodating a new patient.

5.17.2.2. Waste disposal

♦ **Biosafety and biosecurity of sharp waste disposal**

All necessary precautions must be taken to prevent injury to needles, scalpels and other sharp objects. To prevent stinging with syringe needles, it is forbidden to put a cap on used needles in clinical activities. Staff and students should avoid intentionally bending or breaking needles. Sharp objects should be disposed of in dedicated, puncture-resistant containers. Once filled, these puncture-resistant containers should be placed in a 60L yellow container and discarded for neutralization.

♦ **Biosafety and biosecurity of disposal of other hospital waste**

All waste generated in the isolation facility must be disposed of in yellow containers. Hospital waste from animals suspected of being infected with a zoonotic agent or an extremely infectious pathogen should be disposed of in special yellow containers. Biological samples collected from potentially contagious patients must be sealed in water-resistant plastic bags (double packaging) and labeled with appropriate information and risks, before being sent to diagnostic laboratories. Contamination of the outside with plastic bags containing high-risk biological samples must be avoided.

Bandages used on wounds infected with many drug-resistant bacteria (eg MRSA) should be removed under increased biosafety and biosecurity conditions, and bandaging of patients with wounds infected with these bacteria should be performed in poorly circulated areas that can be easily cleaned and disinfected.

Biological samples or any other anatomical piece (feathers, legs, skeleton, etc.) are not allowed to leave the hospital except for medical purposes or to be destroyed.

5.17.2.3. Disinfectant

♦ **Use of disinfectants**

It is made in accordance with the manufacturer's recommendations and only for the purpose specified on the label. Sanitary alcohol, betadine and chlorhexidine solutions are used when it is probable or necessary to contact the skin or other tissues. Other disinfectants, such as hypochlorite (bleach), phenols, quaternary ammonium compounds, hydrogen peroxide or aldehydes, are only applied to surfaces, equipment or installations.

Disinfectants are effective when applied to clean, non-porous surfaces. Some materials such as raw wood and mud cannot be disinfected or decontaminated by routine procedures. In addition, non-porous surfaces that are dusty with mud, oil stains, biofilms and other biological materials will not be decontaminated effectively.

♦ **Shoe disinfectors**

Footwear disinfectant solutions should be changed by students, technicians or veterinarians every morning or whenever they contain excessive amounts of bedding or dirt.

Trays / mats should be refilled by anyone who notices that they are dry or have a low volume of disinfectant; this is the responsibility of all people working in the access area (staff and students).

Staff and students are required to use the foot trays / mats, or disposable footwear protectors, when they are present on their way to work.

Foot mats do not require complete immersion of the feet, as they are designed to disinfect the soles and sides of shoes. However, the toe and the sides of the shoes are usually wet and for this reason the use of waterproof shoes is recommended.

♦ **Disinfection of instruments and equipment**

To reduce the risk of transmission of pathogens, all instruments and equipment must be properly cleaned and disinfected before storage.

To reduce the risks associated with the use of glass thermometers (breakage, mercury contamination) it is recommended that they not be used in FVM clinics. The use of electronic thermometers is recommended.

Electronic thermometers should be thoroughly cleaned and disinfected after each patient, using alcohol and / or chlorhexidine wipes, or disposable guards will be used. Thermometers dedicated to each patient are used for the spaces where contagious patients are treated.

Endoscopes should be cleaned, then disinfected after each use, with disinfectants based on quaternary ammonium derivatives, only by trained personnel.

Stethoscopes are disinfected daily and whenever necessary with alcoholic hand solutions. In patients at high risk of contagion, it is recommended to use the same stethoscope throughout the hospital stay.

♦ **Disinfectants and detergents usable in isolation area**

All authorized biocidal products, detergents and disinfectants for veterinary medicine are accepted for use. The list of these products and their spectrum of activity are presented in Annex 1 of this manual.

Disinfectants used in FVM must take into account their spectrum of antimicrobial action. Detailed information on the antimicrobial action of the different categories of disinfectants is given in Annex 2 of this manual.

Detailed information on the characteristics of the different classes of disinfectants is given in Annex 3 of this manual.

5.17.2.4. Identification of the risks of transmission of pathogens

Pathogens can be spread equine to equine, equine to human or even human to equine orally, by inhalation, by contact with the nasal or ocular mucosa, and by contact with secondary sources of infection or other vectors.

♦ **Respiratory transmission**

Respiratory transmission is achieved by inhaling contaminated aerosol particles. For most pathogens, the survival time in aerosols is short, so the efficiency of transmission in this way is mainly influenced by the direct exposure of humans and other animals to the source of infection. The shorter the distance between the human and the infected equine, the greater the chances of contamination. In veterinary hospitals and clinics, respiratory transmission may occur due to close contact between animals equines and / or humans.

Pathogens may be recently dispersed in the atmosphere (for example, following the sneezing of an equine infected with a respiratory virus), may be re-dispersed by the process of cleaning with pressurized water in cages / paddocks or by dust particles raised by air currents. Temperature, relative humidity and ventilation play an important role in the respiratory transmission of pathogens.

♦ **Digestive transmission**

Digestive transmission involves ingestion of pathogens. Transmission through the digestive tract can also be achieved by initial inhalation of contaminated aerosols and subsequent swallowing of contaminated material.

Potentially contaminated sources are bowls of food and water and any other objects that an animal may ingest or lick. Feed and water contaminated with feces or urine are frequently responsible for digestive contamination.

For humans, most likely transmission through the digestive tract will be through contaminated hands. That is why hand hygiene is one of the most important measures to prevent the transmission of pathogens through the digestive tract to those who come in direct and indirect contact with infected animals.

Proper handling and segregation of patients with diarrhea, as well as cleaning and sterilization of food and water are necessary measures to control the spread of microorganisms through the digestive tract.

♦ **Transmission by direct and indirect contact**

Transmission by direct contact requires that an animal or person come into direct contact with another infected animal or person.

Transmission by indirect contact takes place through contact with surfaces / materials contaminated with biological fluids, such as: blood, saliva, nasal secretions, genitourinary secretions, feces, etc.

The likelihood that inpatients will be infected with contagious pathogens is high. Therefore, it is also very likely that all surfaces of the shelters where patients are housed will be contaminated. Segregation of infected animals horses and minimizing contact with them are two key measures to reduce the risk of transmission through direct or indirect contact.

♦ **Transmission through secondary sources of infection**

Secondary sources of infection serve as intermediates in the cycles of transmission of pathogens from the primary source to humans and other susceptible animals. Any biotic and abiotic object can be a secondary source of infection, including caregivers. For example, door handles, keyboards, telephones, clothing, thermometers, stethoscopes, hoses, brushes, shovels, etc. they may be contaminated and transmit the pathogen to other animals or humans.

The main measures to prevent the transmission of pathogens through secondary sources are: proper cleaning and disinfection, proper use of personal protective equipment for examination and care of patients, use of dedicated equipment for each infectious patient, and identification and separation of sick equine.

Whenever possible, horses showing clinical signs of infectious disease should be handled and treated after clinically healthy patients.

- **Transmission through vectors**

Vector transmission occurs when an insect or arthropod picks up a pathogen from an animal and transmits it to another. For example, West Nile virus is a vector-borne pathogen.

The most common biological vectors are fleas, ticks, flies and mosquitoes.

The most effective means of preventing vector transmission is to eliminate or reduce the insect population, or at least, to avoid exposing animals to vectors.

- **Zoonoses**

Veterinarians and staff who come into frequent contact with animals are at increased risk of contracting a zoonotic infectious agent.

In case of suspicion or confirmation of exposure to a zoonotic agent, clients, the attending veterinarian, FVM staff, students and other persons who have come in contact, must be identified and recorded by the Head of FVM Clinics and reported to FVM management.

Anyone suspected or confirmed of an occupational infection should seek medical attention immediately after notifying a responsible person, preferably the attending veterinarian, who has informed you of the appropriate hierarchical structures.

The Office of Occupational Safety - PSI should be informed for further referral to an occupational physician.

FVM staff and students, as well as friends and family members who are at high risk of contacting a potential zoonotic infectious agent should contact their family doctor.

- **Special risks of contact with infectious diseases**

Anyone whose immune system is compromised is at a higher risk for zoonoses. In addition to immunosuppression associated with disease or treatment with certain drugs, the immune status may also be influenced by other physiological factors, such as age (children under 5 years and the elderly) or pregnancy in women. What is the most severe immunosuppression caused by HIV / AIDS. Other conditions that can compromise or disrupt immune function are diabetes, alcoholism, cirrhosis, malnutrition and autoimmune diseases.

Immunosuppression may also be induced by radiotherapy, chemotherapy, long-term corticosteroid therapy, or immunosuppressive therapy associated with organ transplantation, medical device implants, splenectomy, or long-term hemodialysis.
Before treating any patient, all staff, including students, should inform their supervisor of any special health problems, such as pregnancy and therapeutic immunosuppression, that may increase the risk of infection or the severity of the clinical course associated with infection with pathogens. zoonotic.
All discussions will be confidential; however, communication between staff about the situation may be necessary to implement appropriate precautions and / or to adapt routine clinical or didactic procedures in the hospital.

5.17.2.5. Cleaning and disinfection protocol in isolation facility

Whenever disinfectants are used, gloves and proper clothing must be worn. When performing disinfection, if there is a risk of splashing, additional protective equipment (mask, face visor, goggles, waterproof clothing and boots) should be worn.
All bedding and faeces must be removed before disinfection. Dirty contaminants and urine significantly reduce the effectiveness of most disinfectants. If washing with a hose, care must be taken to minimize the possibility of aerosolization of pathogens.
Wash the paddock, including walls, doors, watering can, with water and detergent or soap; mechanical rubbing or scraping is always required to dislodge residues that prevent disinfectants. After the mechanical cleaning is completed, in order to prevent the dilution of the disinfectant solutions, the paddle is allowed to drain and dry for a sufficient time.
To remove detergent residues, the cleaned area must be rinsed thoroughly.
In the cleaned and dry paddock, the disinfectant solution is sprayed, including on the walls, doors and drinkers. A 2.5% sodium hydroxide solution may be used, which must remain in contact with the surfaces for 15 minutes, especially if an infectious agent is suspected.
Excess disinfectant should be removed with water. After the end of the period of action, the disinfectant solution must be removed from all surfaces of the paddock and then a new patient can be accommodated in the paddock.
After the disinfection is completed, the staff takes off their protective clothing and washes their hands.
Regardless of the patient's infectious condition, all multi-use areas where animals are examined or treated must be cleaned and disinfected after use by the responsible persons. Cleaning tools must be cleaned and disinfected after use (including handles).

Procedure for cleaning a vacant accommodation space

Housing used for contagious equine will be cleaned using the general cleaning and disinfection protocol. The caretaker must empty, clean and disinfect the accommodation as soon as possible, but after the cleaning of the non-contagious accommodation has been completed. The accommodation is considered a contagious area until disinfected and consequently no equinel is admitted into it until it has been thoroughly cleaned and disinfected.

5.17.2.6. Shoe disinfection protocol

Footwear disinfectant solutions should be changed every morning by the caregiver.
Disinfectant mats should be cleaned whenever they contain excessive amounts of bedding or dirt and reloaded with disinfectant when dry; this is the responsibility of all people working in the area (students, PhD students, technical staff and clinicians).
Staff and students are required to use the trays / mats for footwear and disposable guards when they are present on their way to work.
Disinfectant solutions can damage shoes if they are not waterproof.

5.17.2.7. Disinfection protocol for tools and equipment

All instruments, equipment or other objects, including gastric tubes, restraint equipment, thermometers, endoscopes, dressing items, etc. must be cleaned, sterilized or disinfected between uses in different patients.
Materials that are sterilized between uses (surgical instruments and equipment) should be cleaned with soap and water, then disinfected with a 0.5% chlorhexidine solution or equivalent immediately after use. The equipment must then be returned to the warehouse for sterilization.

Stethoscopes
Cleaning: wipe with damp paper.
Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.
Personal stethoscopes may be used in animals in non-contagious areas, but should be regularly cleaned and disinfected (recommendation: at the beginning and end of the day). Immediate cleaning and disinfection is required when the stethoscopes are visibly dirty.
- Individual stethoscopes, owned by FVM, are assigned to each high-risk contagious patient (class 4). They are stored at patients' stands during hospitalization and cleaned, then disinfected after discharge.

Thermometers
Cleaning: wipe or wash with soap to remove raw faeces.
Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.

Glass thermometers are prohibited in FVM to reduce the potential risks associated with exposure to glass and mercury. Electronic thermometers are used instead.
Personal electronic thermometers can be used on animals in non-contagious areas, but must be cleaned and disinfected after each patient or disposable guards will be used.
Probe thermometers used for continuous temperature monitoring (eg anesthesia or intensive care) should be cleaned and disinfected immediately after use.
Immediate cleaning and disinfection of thermometers is mandatory when they are visibly dirty.
Individual thermometers should be assigned to each high-risk contagious patient (class 4)
They are stored at the place of hospitalization of patients throughout the hospitalization period and cleaned, then disinfected after discharge.

Hoof picks
A hoof pick should be assigned to each horse.
Cleaning: soap washing to remove raw material.
Disinfection: soaking in chlorhexidine or other equivalent biocide.
Staff and students should use hoof picks to clean the horse's feet before leaving the paddock.
The hoof pick should be cleaned and disinfected once a week by caregivers.
After use on a horse with bacterial or fungal problems at the hoof level, the hoof pick should be cleaned and disinfected immediately.
Each patient is assigned an individual hoof pick. They are stored in patients' paddocks during hospitalization and cleaned and disinfected after discharge.

Brush
Each horse must be assigned a brush.
Cleaning: washing with soap to remove raw material. Brushes used for a horse with a parasitic skin disease (chorioptic / psoroptic / sarcoptic scabies, pediculosis, etc.) should be treated with an antiparasitic before disinfection; In the case of a patient suffering from a fungal infection, an antifungal should be used before disinfection.
Disinfection: soaking in alcohol or chlorhexidine.
Horses should be brushed regularly by students and staff.
Brushes should be cleaned and disinfected (using alcohol or 0.5% chlorhexidine) once a week and re-used in another patient.
Individual brushes are allocated for each patient at high contagious risk (classes 3 and 4). The brushes are stored in the patients' paddock during hospitalization and then cleaned and disinfected after the patient leaves.
Before and after use on a horse with a dermatological problem (either contagious or potentially infected) brushes should be cleaned and disinfected immediately.

Twitches

Cleaning: washing with soap to remove raw material.
Disinfection: soaking in chlorhexidine or other equivalent product.
Twitches should be washed and disinfected weekly by the technical staff employed.
After use in a class 3 or class 4 patient, the twitch should be cleaned and disinfected immediately.
Other personal instruments and equipment (e.g., haemostats, scissors) may be used in more than one patient, but must be cleaned and disinfected between patients using 0.5% chlorhexidine solution available in the pharmacy and in front of each paddock.

Equine trailer
The technical staff / caretakers will clean the trailer immediately after it has been used and at least once a week.

Other individual tools and equipment
Other instruments may be used on multiple patients, but must be cleaned and disinfected between patients using 0.5% chlorhexidine solution.

5.18. Biosafety and Biosecurity of Rooms and the Isolation Premises in Veterinary Teaching Unit for Livestock

5.18.1. Biosafety and biosecurity of personnel in Veterinary Teaching Unit for Livestock

5.18.1.1 Hand hygiene

- **Hand hygiene should be done in the following situations:**
  - Before and after handling each patient;
  - After any contact with contaminated blood, body fluids, secretions, excretions and objects, whether or not gloves have been worn;
  - Immediately after removing the gloves;
  - Between different procedures in the same patient, to prevent cross-contamination of different parts of the body;
  - After handling samples or laboratory cultures;
  - After cleaning cages, paddocks, tables or any contaminated surface;
  - Before meals, breaks, smoking or leaving work;
  - Before and after the use of toilets (toilets);

- **Recommended hand washing technique:**
  - Wet hands and forearms with warm water;
  - Put ~ 3-5 ml (1-2 complete pumps) of soap in the palm of your hand;

- Strongly rub each face of the hands beyond the wrist for 10-30 seconds, rub each finger individually and between the fingers, under the rings and nails;
- Rinse your hands under running hot water until all soap residue is removed;
- Dry your hands with a disposable paper towel or in a hot air dryer.

♦ **Recommended technique for using a hand sanitizer:**
- Pour an appropriate amount of disinfectant into the palm of your hand;
- Rub the disinfectant with the fingertips of the opposite hand, then spread it all over the hand;
- Repeat the procedure with the opposite hand;
- Rub both hands until dry, without rinsing.

♦ If it is not possible to wash your hands immediately, wet wipes with alcohol or other sanitizing products can be used until access to hot water and soap.

♦ FVM staff and students working directly with livestock or handling biological samples are encouraged to keep their nails short and not wear jewelry on their fingers or hands.

♦ Before starting work, all lesions on the skin of the hands and forearms should be covered with a waterproof bandage.

5.18.1.2. The protective equipment and street clothes higiene

♦ **Street clothing and footwear**

Street clothing and footwear (capes, jackets, coats, boots, etc.) should not be introduced / stored in isolation room. Street clothing and footwear must be stored in lockers located outside the isolation area.

♦ **The protective equipment for the clinic**

Lab coat, overalls and uniforms for practical works / farm / clinic are the first barrier of individual protection against contamination, but in case of increased risk of contact with contaminated liquids, splashing or soaking with blood or other secretions and excretions, they should in turn be protected with waterproof aprons or capes. Lab coat and overalls should be changed whenever they become visibly dirty or contaminated and at the end of each day.

Overalls are recommended for current activities carried out in animal farms.

Uniforms specially designed for this activity must always be worn for surgery (disposable sterile overalls/coveralls/uniforms). These uniforms should not be worn during other procedures or during patient handling.

♦ **Overalls for isolation facility**

Access to the isolator is done only with disposable protective equipment.

♦ **Footwear**

To avoid injury, it is recommended to wear closed shoes (washable rubber boots with metal dome covered with disposable plastic protectors), which reduce the risk of injury from sharp objects, scratches caused by animals and to protect the feet from contact with potentially infectious materials such as feces, urine, secretions, excretions and other biological substances. In order to prevent the spread of biohazardous materials from contaminated floors to other areas of the clinic, disposable footwear or footwear protections are required. These may be necessary for staff when patients with infectious diseases are kept in boxes or paddocks directly on the floor or if they may contaminate the floor (animals with severe diarrhea). Specially designated footwear should also be used around stables for horses or other animals known to carry infectious agents, such as *Salmonella*. Disposable footwear must be removed when leaving the contaminated area and disposed of in containers intended for this type of waste or stored in the contaminated area until it is collected in special garbage bags.

♦ **Other personal protective equipment**

The following standard protection measures shall apply to all clinical activities and to each contact with animals, their breeding environment and the biological samples collected from them:

- proper hand washing;
- wound coverage;
- use of gloves whenever handling or coming into contact with biological fluids (blood, secretions, excretions), mucous membranes or damaged skin;
- protection of clothing with waterproof equipment whenever there is a risk of contamination with liquid substances (blood droplets, secretions, excretions or other pathological fluids resulting during the medical act);
- protection of the conjunctival, nasal and buccal mucous membranes if there is a risk of splashing with blood or other contaminated liquids (goggles or protective mask).

Personal protective equipment is used both to protect veterinary medical staff and to reduce the risk of transmitting pathogens through clothing to other animals, their owners, veterinary staff, students and the public.

The disposable protective clothing must be worn whenever entering the isolator, throughout the accommodation period of an animal at risk of infection.

The size of the protective equipment must be appropriate to the size of the personnel.

Clients should wear the same protective equipment as veterinarians if they request access to clinics where there is a risk of infection.

♦ **The steps of equipping and removing personal protective equipment**

When equipping personal protective equipment, the following steps will be followed in succession: 1) hand hygiene, 2) overalls, 3) cap, 4) protective mask, 5) protective glasses, 6) protective gloves.

When removing personal protective equipment, the following steps will be followed in succession: 1) protective gloves - the inner face is pulled out !, 2) goggles, 3) overalls, 4) protective mask, 5) cap, 6) hand hygiene.

5.18.1.3. Securing sharp objects

- **The basic principles of safety when handling sharp objects are:**
  - The person who generates the sharp objects is responsible for their safe disposal;
  - Sharp objects are not passed from hand to hand;
  - Sharp containers are replaced when full (not recycled);
  - Children and animals must not have access to containers for sharp objects;
  - Sharp containers are not made available to animals.

In veterinary medical practice, among the most common accidents are punctures with syringe needles, following improperly performed injections. The utmost care must be taken to reinsert the needle into the protective cap. If this operation is not necessary, the used needles are thrown directly into the sharp object container, using the device on the lid of the container to detach the needle. As far as possible, the needles should not be removed from the syringe by hand. Also, the caps of the needles are not removed with the help of the teeth.

Sharp containers are the safest and most economical way to collect for the destruction of needles, scalpel blades and other sharp objects and should be placed in each area for animal care. Sharp objects must not be transferred from one container to another. Needle cutters before disposal should not be used as they increase the risk of aerosolization of the contents, which may be harmful to humans.

5. 18.1.4. Biosafety, biosecurity and hygiene measures of livestock in the clinic and/or isolated

- **Biosafety and biosecurity**

The care of sick livestock and the educational process of teaching them to students obviously require much more frequent, longer-lasting contacts with more patients than routine veterinary medical activity. However, it is important to remember that such contacts can contribute to the transmission of infectious and / or zoonotic pathogens. For this reason, in order to limit the risk of nosocomial infections, FVM staff and students should minimize contact with isolated livestock.

Staff and students who come into contact with suspected / confirmed contagious livestock should limit contact with them only to essential maneuvers. Where appropriate, patients should be monitored by observation without physical contact, if possible with the aid of cameras.

Staff and students should enter paddocks only when necessary and should avoid touching or playing with livestock when passing by.

Whenever possible, staff and students should access high biological risk areas only after visiting areas with minimal biological risk.

- **Livestock hygiene**

In the FVM, more importance must be given to the accommodation conditions offered to patients. Regular hygiene and decontamination of the isolation room is a basic activity that contributes to a significant reduction in infectious pressure. Drinking and feeding vessels must be changed and cleaned regularly. Collected garbage must be stored under strict biosecurity conditions (sealed yellow bags).
The isolation room must be clean, tidy and neat, without unduly stored medicines or materials, without bedding stored outside the paddock and without the personal belongings of students or FVM staff. Staff and students must order all materials used and properly dispose of all waste, leaving the workspace in proper condition before leaving the premises.

5.18.1.5. Measures for the protection of personnel who sanitize the unit rooms

When performing decontamination operations, use the overalls, protective mask, visor or goggles, and boots with disposable plastic protection.
Personnel performing cleaning activities must be trained, have adequate protective equipment and use cleaning and sanitation products in accordance with the product data sheet.
Mechanical cleaning / disinfection should prevent contact of damaged skin and mucous membranes with blood residues or other biological fluids. Skin lesions should be protected with a waterproof bandage.
At the end of the disinfection, the operator removes his protective equipment and washes his hands.

5.18.1.6. Other biosafety, biosecurity and personal hygiene measures

- **Eating and drinking**

Consumption and storage of food and drink in premises intended for the examination, treatment or accommodation of animals is not permitted. Staff and students are also prohibited from eating, drinking or storing food in working spaces in the clinic and in the isolation area.

5.18.2. Biosafety and Biosecurity of Rooms and the Isolation Premises in Veterinary Teaching Unit for Livestock

5.18.2.1. Cleaning and disinfection of equipment and work surfaces

All work surfaces and equipment must be cleaned immediately after use or whenever necessary.

Dust and aerosols should be avoided during surface cleaning, as they may contain pathogens for humans and animals.

Dry surfaces should be moistened before sweeping. The areas to be cleaned must be properly ventilated.

Clean items should be kept separate from dirty items. Equipment cleaning and disinfection operations must take into account their destination and the manufacturer's recommendations. Any equipment that must undergo chemical or thermal sterilization or disinfection procedures must first be cleaned. In order to avoid the production of splashes and aerosols, for all water-resistant objects it is recommended that the cleaning and disinfection steps be performed by immersion in the cleaning / disinfectant solution.

For patients in isolation, the use of disposable containers is recommended.

To ensure efficacy, disinfectants should be used according to the manufacturers' instructions, taking into account in particular dilution and contact time. Before returning the reusable materials, equipment and instruments, the disposable sharp parts (needles, scalpel blades, etc.) will be removed and thrown in special, puncture-resistant containers (the yellow plastic boxes).

Do not mix dirty laundry with waste, hay or other bedding, sharp objects or anatomical pieces.

Before returning to the warehouse, the equipment and surgical instruments are cleaned of organic matter, washed and decontaminated.

Before using the disinfectant, large wastes should be removed, avoiding the formation of dust or aerosolization, which could favor the dispersion of pathogens in the environment.

In order to decompose the surface biofilm and remove surface residues that prevent or inhibit the deep disinfection process, it is recommended to clean these areas with water and detergent or soap.

Surfaces cleaned with detergent will be rinsed with plenty of water to remove traces of detergents that could inactivate the disinfectant used.

After complete drying, the surfaces are treated with a disinfectant solution prepared according to the manufacturer's instructions, which is left to act for at least 15 minutes.

Excess disinfectant is removed with water, clean paper towels, mop or squeegee.

The disinfectant should be washed from all surfaces of the cage / paddock or allowed to dry for a sufficient period of time (according to the manufacturer's specifications) before accommodating a new patient.

Multipurpose areas (hospital, examination rooms, examination tables, etc.) where animals are examined or treated should be cleaned and disinfected immediately after use by staff and students responsible for the patient, whether or not the animal has had a contagious disease.

5.18.2.2. Waste disposal

- **Biosafety and biosecurity of sharp waste disposal**

All necessary precautions must be taken to prevent injury to needles, scalpels and other sharp objects. To prevent stinging with syringe needles, it is forbidden to put a cap on used needles in clinical activities. Staff and students should avoid intentionally bending or breaking needles. Sharp objects should be disposed of in dedicated, puncture-resistant containers. Once filled, these puncture-resistant containers should be placed in a 60L yellow container and discarded for neutralization.

♦ **Biosafety and biosecurity of disposal of other waste**

Waste with an infectious risk must be disposed of in containers present in the ward where those veterinary medical activities were carried out.

Hospital waste from animals without suspicion of infection with zoonotic or infectious pathogens should be disposed of in current waste bags.

Hospital waste from animals suspected of being infected with a zoonotic agent or an extremely infectious pathogen should be disposed of in special yellow containers.

All waste generated in the isolation facility must be disposed of in yellow containers.

Biological samples collected from potentially contagious patients must be sealed in water-resistant plastic bags (double packaging) and labeled with appropriate information and risks, before being sent to diagnostic laboratories. Contamination of the outside with plastic bags containing high-risk biological samples must be avoided.

Bandages used on wounds infected with many drug-resistant bacteria (eg MRSA) should be removed under increased biosafety and biosecurity conditions, and bandaging of patients with wounds infected with these bacteria should be performed in poorly circulated areas that can be easily cleaned and disinfected.

Biological samples or any other anatomical piece (feathers, legs, skeleton, etc.) are not allowed to leave the hospital except for medical purposes or to be destroyed.

5.18.2.3. Disinfectants

♦ **Use of disinfectants**

It is made in accordance with the manufacturer's recommendations and only for the purpose specified on the label. Sanitary alcohol, betadine and chlorhexidine solutions are used when it is probable or necessary to contact the skin or other tissues. Other disinfectants, such as hypochlorite (bleach), phenols, quaternary ammonium compounds, hydrogen peroxide or aldehydes, are only applied to surfaces, equipment or installations.

Disinfectants are effective when applied to clean, non-porous surfaces. Some materials such as raw wood and mud cannot be disinfected or decontaminated by routine procedures. In addition, non-porous surfaces that are dusty with mud, oil stains, biofilms and other biological materials will not be decontaminated effectively.

♦ **Shoe disinfectors**

Footwear disinfectant solutions should be changed by students, technicians or veterinarians every morning or whenever they contain excessive amounts of bedding or dirt.

Trays / mats should be refilled by anyone who notices that they are dry or have a low volume of disinfectant; this is the responsibility of all people working in the access area (staff and students).

Staff and students are required to use the foot trays / mats, or disposable footwear protectors, when they are present on their way to work.
Foot mats do not require complete immersion of the feet, as they are designed to disinfect the soles and sides of shoes. However, the toe and the sides of the shoes are usually wet and for this reason the use of waterproof shoes is recommended.

♦ **Disinfection of instruments and equipment**

To reduce the risk of transmission of pathogens, all instruments and equipment must be properly cleaned and disinfected before storage.
To reduce the risks associated with the use of glass thermometers (breakage, mercury contamination) it is recommended that they not be used in FVM clinics. The use of electronic thermometers is recommended.
Electronic thermometers should be thoroughly cleaned and disinfected after each patient, using alcohol and / or chlorhexidine wipes, or disposable guards will be used. Thermometers dedicated to each patient are used for the spaces where contagious patients are treated.
Endoscopes should be cleaned, then disinfected after each use, with disinfectants based on quaternary ammonium derivatives, only by trained personnel.
Stethoscopes are disinfected daily and whenever necessary with alcoholic hand solutions. In patients at high risk of contagion, it is recommended to use the same stethoscope throughout the hospital stay.

♦ **Disinfectants and detergents usable**

All authorized biocidal products, detergents and disinfectants for veterinary medicine are accepted for use. The list of these products and their spectrum of activity are presented in Annex 1 of this manual.
Disinfectants used in FVM must take into account their spectrum of antimicrobial action. Detailed information on the antimicrobial action of the different categories of disinfectants is given in Annex 2 of this manual.
Detailed information on the characteristics of the different classes of disinfectants is given in Annex 3 of this manual.

5.18.2.4. Identification of the risks of transmission of pathogens

Pathogens can be spread from animal to animal, from animal to human or even from human to animal orally, by inhalation, by contact with the nasal or ocular mucosa, and by contact with secondary sources of infection or other vectors.

♦ **Respiratory transmission**

Respiratory transmission is achieved by inhaling contaminated aerosol particles. For most pathogens, the survival time in aerosols is short, so the efficiency of transmission in this way is mainly influenced by the direct exposure of humans and other animals to the source of infection. The shorter the distance between the human and the infected animal, the greater the chances of contamination. In veterinary hospitals and clinics, respiratory transmission may occur due to close contact between animals livestock and / or humans.

Pathogens may be recently dispersed in the atmosphere (for example, following the sneezing of an animal infected with a respiratory virus), may be re-dispersed by the process of cleaning with pressurized water in cages / paddocks or by dust particles raised by air currents (for example: Coxiella burnetti). Temperature, relative humidity and ventilation play an important role in the respiratory transmission of pathogens.

♦ **Digestive transmission**

Digestive transmission involves ingestion of pathogens. Transmission through the digestive tract can also be achieved by initial inhalation of contaminated aerosols and subsequent swallowing of contaminated material.

Potentially contaminated sources are bowls of food and water and any other objects that an animal may ingest or lick. Feed and water contaminated with feces or urine are frequently responsible for digestive contamination.

For humans, most likely transmission through the digestive tract will be through contaminated hands. That is why hand hygiene is one of the most important measures to prevent the transmission of pathogens through the digestive tract to those who come in direct and indirect contact with infected animals.

Proper handling and segregation of patients with diarrhea, as well as cleaning and sterilization of food and water are necessary measures to control the spread of microorganisms through the digestive tract.

♦ **Transmission by direct and indirect contact**

Transmission by direct contact requires that an animal or person come into direct contact with another infected animal or person.

Transmission by indirect contact takes place through contact with surfaces / materials contaminated with biological fluids, such as: blood, saliva, nasal secretions, genitourinary secretions, feces, etc.

The likelihood that inpatients will be infected with contagious pathogens is high. Therefore, it is also very likely that all surfaces of the shelters where patients are housed will be contaminated. Segregation of infected animals horses and minimizing contact with them are two key measures to reduce the risk of transmission through direct or indirect contact.

♦ **Transmission through secondary sources of infection**

Secondary sources of infection serve as intermediates in the cycles of transmission of pathogens from the primary source to humans and other susceptible livestock. Any biotic and abiotic object can be a secondary source of infection, including caregivers. For example, door handles, keyboards, telephones, clothing, thermometers, stethoscopes, hoses, brushes, shovels, etc. they may be contaminated and transmit the pathogen to other animals or humans.

The main measures to prevent the transmission of pathogens through secondary sources are: proper cleaning and disinfection, proper use of personal protective equipment for examination and care of patients, use of dedicated equipment for each infectious patient, and identification and separation of sick livestock.

Whenever possible, horses showing clinical signs of infectious disease should be handled and treated after clinically healthy patients.

♦ **Transmission through vectors**

Vector transmission occurs when an insect or arthropod picks up a pathogen from an animal and transmits it to another. For example, Bluetongue virus is a vector-borne pathogen.
The most common biological vectors are fleas, ticks, flies and mosquitoes.
The most effective means of preventing vector transmission is to eliminate or reduce the insect population, or at least, to avoid exposing animals to vectors.

♦ **Zoonoses**

Veterinarians and staff who come into frequent contact with animals are at increased risk of contracting a zoonotic infectious agent.
In case of suspicion or confirmation of exposure to a zoonotic agent, clients, the attending veterinarian, FVM staff, students and other persons who have come in contact, must be identified and recorded by the Head of FVM Clinics and reported to FVM management.
Anyone suspected or confirmed of an occupational infection should seek medical attention immediately after notifying a responsible person, preferably the attending veterinarian, who has informed you of the appropriate hierarchical structures.
The Office of Occupational Safety - PSI should be informed for further referral to an occupational physician.
FVM staff and students, as well as friends and family members who are at high risk of contacting a potential zoonotic infectious agent should contact their family doctor.

♦ **Special risks of contact with infectious diseases**

Anyone whose immune system is compromised is at a higher risk for zoonoses. In addition to immunosuppression associated with disease or treatment with certain drugs, the immune status may also be influenced by other physiological factors, such as age (children under 5 years and the elderly) or pregnancy in women. What is the most severe immunosuppression caused by HIV / AIDS. Other conditions that can compromise or disrupt immune function are diabetes, alcoholism, cirrhosis, malnutrition and autoimmune diseases.
Immunosuppression may also be induced by radiotherapy, chemotherapy, long-term corticosteroid therapy, or immunosuppressive therapy associated with organ transplantation, medical device implants, splenectomy, or long-term hemodialysis.
Before treating any patient, all staff, including students, should inform their supervisor of any special health problems, such as pregnancy and therapeutic immunosuppression, that may increase the risk of infection or the severity of the clinical course associated with infection with pathogens. zoonotic.
All discussions will be confidential; however, communication between staff about the situation may be necessary to implement appropriate precautions and / or to adapt routine clinical or didactic procedures in the hospital.

5.18.2.5. Cleaning and disinfection protocol in rooms of the unit

Whenever disinfectants are used, gloves and proper clothing must be worn. When performing disinfection, if there is a risk of splashing, additional protective equipment (mask, face visor, goggles, waterproof clothing and boots) should be worn.

All bedding and faeces must be removed before disinfection. Dirty contaminants and urine significantly reduce the effectiveness of most disinfectants. If washing with a hose, care must be taken to minimize the possibility of aerosolization of pathogens.

Wash the paddock, including walls, doors, watering can, with water and detergent or soap; mechanical rubbing or scraping is always required to dislodge residues that prevent disinfectants. After the mechanical cleaning is completed, in order to prevent the dilution of the disinfectant solutions, the paddle is allowed to drain and dry for a sufficient time.

To remove detergent residues, the cleaned area must be rinsed thoroughly.

In the cleaned and dry paddock, the disinfectant solution is sprayed, including on the walls, doors and drinkers. A 2.5% sodium hydroxide solution may be used, which must remain in contact with the surfaces for 15 minutes, especially if an infectious agent is suspected.

Excess disinfectant should be removed with water. After the end of the period of action, the disinfectant solution must be removed from all surfaces of the paddock and then a new patient can be accommodated in the paddock.

After the disinfection is completed, the staff takes off their protective clothing and washes their hands.

Regardless of the patient's infectious condition, all multi-use areas where animals are examined or treated must be cleaned and disinfected after use by the responsible persons. Cleaning tools must be cleaned and disinfected after use (including handles).

Procedure for cleaning a vacant accommodation space

Housing used for contagious animals will be cleaned using the general cleaning and disinfection protocol. The caretaker must empty, clean and disinfect the accommodation as soon as possible, but after the cleaning of the non-contagious accommodation has been completed. The accommodation is considered a contagious area until disinfected and consequently no animal is admitted into it until it has been thoroughly cleaned and disinfected.

5.18.2.6. Shoe disinfection protocol

Footwear disinfectant solutions should be changed every morning by the caregiver.

Disinfectant mats should be cleaned whenever they contain excessive amounts of bedding or dirt and reloaded with disinfectant when dry; this is the responsibility of all people working in the area (students, PhD students, technical staff and clinicians).

Staff and students are required to use the trays / mats for footwear and disposable guards when they are present on their way to work.

Disinfectant solutions can damage shoes if they are not waterproof.

5.18.2.7 Disinfection protocol for tools and equipment

All instruments, equipment or other objects, including gastric tubes, restraint equipment, thermometers, endoscopes, dressing items, etc. must be cleaned, sterilized or disinfected between uses in different patients.
Materials that are sterilized between uses (surgical instruments and equipment) should be cleaned with soap and water, then disinfected with a 0.5% chlorhexidine solution or equivalent immediately after use. The equipment must then be returned to the warehouse for sterilization.

Stethoscopes
Cleaning: wipe with damp paper.
Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.
Personal stethoscopes may be used in animals in non-contagious areas, but should be regularly cleaned and disinfected (recommendation: at the beginning and end of the day). Immediate cleaning and disinfection is required when the stethoscopes are visibly dirty.
- Individual stethoscopes, owned by FVM, are assigned to each high-risk contagious patient (class 4). They are stored at patients' stands during hospitalization and cleaned, then disinfected after discharge.

Thermometers
Cleaning: wipe or wash with soap to remove raw faeces.
Disinfection: use wipes with alcohol, chlorhexidine or hand sanitizer solution that are available everywhere in the hospital.
Glass thermometers are prohibited in FVM to reduce the potential risks associated with exposure to glass and mercury. Electronic thermometers are used instead.
Personal electronic thermometers can be used on animals in non-contagious areas, but must be cleaned and disinfected after each patient or disposable guards will be used.
Probe thermometers used for continuous temperature monitoring (eg anesthesia or intensive care) should be cleaned and disinfected immediately after use.
Immediate cleaning and disinfection of thermometers is mandatory when they are visibly dirty.
Individual thermometers should be assigned to each high-risk contagious patient (class 4)
They are stored at the place of hospitalization of patients throughout the hospitalization period and cleaned, then disinfected after discharge.

5.19. Biosafety and biosecurity Principles Applied in Concesionated Sanitary Veterinary Circumscriptions (CSVs)

Actions undertaken in CSVs follow the principles of biosafety and biosecurity concerning protective equipment, sanitization of instruments described in Chapter 5.6.

5.20. Biosafety and biosecurity Principles Applied in the Zoological Garden

During extramural educational activities and EPTs that take place inside the Zoological Garden, students and staff of FVM will abide by and enforce the specific norms and biosafety and biosecurity measures.
During each activity carried out extramural or as an EFA, the rules in chapters 5.4.2. General rules on staff biosafety and biosecurity and 5.4.3. General rules for space biosafety and biosecurity will be taken into account and applied accordingly.

6. Biological risk communication protocols within FVM

6.1. Biological risk communication protocols at the Reception of the VTH

6.1.1. Protocol for employed staff

When a client mentions during a phone call any sign that raises the suspicion of a contagious disease (for example: acute vomiting, diarrhea, ataxia, abortion, cough, sneezing, acute fever, etc.):

- The receptionist will schedule the visit only after a clinician's approval and only if an isolation box / cage is available.
- The reason for the consultation will be indicated in the visits schedule (for example: acute diarrhea, acute vomiting, acute cough, acute sneezing, acute fever, etc.).
- "Suspicion of contagious disease" will be written next to the scheduled visit.
- The customer will be asked to leave the animal in the vehicle until it is received by the staff. Before authorizing the patient to enter the hospital, the responsible clinician will perform the primary clinical assessment of the patient in order to establish the risk of contagion. Depending on the category and circumstances of the risk, the animal will be brought directly to an examination room or isolator. To reduce the risk of contamination of the hospital environment, small animals should be transported on a wheeled stretcher (or in a cat transportation cage).

If a patient with signs or a history of acute and / or possibly contagious disease is presented directly at the reception, the receptionist should immediately contact the reception / triage service and coordinate directing the animal to an examination / emergency room or towards its isolation, thus minimizing contamination of the hospital environment.

6.1.2. Protocol for students

Admission of potentially contagious patients will be organized as follows:

- The reason for the consultation will be indicated in the visits schedule (for example: acute diarrhea, acute vomiting, acute cough, acute sneezing, acute fever, etc.).

- "Suspicion of contagious disease" will be written next to the scheduled visit.
- The customer will be asked to leave the animal in the vehicle until it is received by the staff. Before authorizing the patient to enter the hospital, the responsible clinician will perform the primary clinical assessment of the patient necessary to establish the risk of contagion. Depending on the category and circumstances of the risk, the animal will be brought directly to an examination room or isolator. To reduce the risk of contamination of the hospital environment, small animals should be transported on a wheeled stretcher (or in a cat transportation cage).
- Direct contact between the potentially contagious patient and other patients present in the FVM premises is not allowed.
- In order to minimize the biological risks for students and other patients, a minimum number of students (assigned by the clinician) will be able to participate in the consultation / examination of potentially contagious patients.
- Upon exiting the the examination room, areas or equipment contaminated with faeces and / or body fluids of the examined patient should be cleaned and disinfected immediately by the student and / or staff responsible for the patient..
- An appropriate sign must be placed on the examination room door and the room cannot be used for another patient until it has been thoroughly cleaned and disinfected.
- Students must be trained (using video instructions, courses and the FVM website) and follow the biosafety and biosecurity protocol specific to contacts with contagious patients.

6.1.3. Exclusion criteria for reception and / or hospitalization

A patient suffering from a reportable disease (see Appendix 6) cannot enter the hospital and be subsequently hospitalised. Admission may also be refused if the risks to other patients or staff are too great compared to the risk to that animal. The specific criteria for refusing consultation / hospitalization for each species are specified in each hospital service.
Only clinicians have the authority to refuse an animal.

6.2. Communicating the risks regarding the contagious state of the patients

Given the complexity of caring for VTH patients and the numerous people working on the FVM Campus, it is essential to efficiently communicate the risk of spreading contagious pathogens.
Effective and proactive communication of patients' actual and potential infectious status decreases the likelihood of spreading nosocomial or zoonotic diseases.
For biosafety and biosecurity issues, risk communication involves adequate notification and education of existing risks to all persons who are or will come into contact with infectious patients.
Those involved should be instructed in the precautions required to prevent the spread of pathogens to humans or other patients and the disinfection measures applied in areas of biological risk or for contaminated materials.
All patients on FVM premises should be evaluated by clinicians to identify biological risks. It is the responsibility of the senior clinician to correctly assess the risk of transmitting contagious diseases and to

implement the most appropriate infection control strategies, in accordance with biosafety and biosecurity procedures.

The management of the Clinic and the FVM must be notified as soon as possible of all biological hazards (whether known or suspected). Notifications include all declarable diseases (eg African swine fever), diseases caused by zoonotic agents, highly contagious diseases, highly pathogenic diseases, infections caused by (multi) drug-resistant bacteria (e.g.: MRSA or VRE) and high persistence pathogens or difficult to neutralize with the usual hygiene measures. The notification is made by e-mail or telephone message by the responsible veterinarian.

For the effective management of the risks of spreading infection to humans and animals, all risks associated with contagious pathogens must be properly communicated to all FVM staff, students and clients.

As a patient's infectious condition may change during hospitalization, the informative documents made for this purpose should be updated periodically.

6.3. Communication of biological risks in VTH

Biological hazards must be clearly labeled on cages / paddocks that house contagious patients, as well as in the nearby area; the following information must be displayed:

- Classification of the disease (according to Annex 4. Classification of microorganisms according to their biological risk).
- Appropriate disinfection procedures for infection control.
- Applicable medical and hygiene requirements
- Preventive measures
- Possible zoonotic risk
- Suspected / confirmed diagnosis (name of the disease / condition).

Staff and students responsible for the care of contagious patients must ensure that special requirements and care needs have been properly communicated to everyone that may work or come into contact with the patients or their housing spaces. In addition, they must ensure that the information has been properly communicated to the FVM Biosafety and biosecurity Commission.

7. DEFINITIONS

Antimicrobial agent - Any substance - of natural, semi-synthetic or synthetic origin - that kills or inhibits the growth of a microorganism. Used as a general term for drugs, chemicals or other substances that are capable of killing or slowing down the growth of microbes. Examples: antibacterial drugs, antiviral agents, antifungal and antiparasitic agents.

Pathogens – microorganisms - bacteria, viruses, rickets, parasites, fungi - includes other entities such as prions, genetically modified organisms or cell cultures, which can cause disease in humans and animals.

Antibiotic - Soluble organic substance, produced by some microorganisms plant or animal origin, that has is capable of destroying certain microbes or stopping their development, which makes it useful in treating infectious diseases. All antibiotics are antimicrobial agents. Examples: penicillin, lincomycin.

Antiseptic - antibacterial or antiviral chemical that is applied to living tissues or epithelium, causing the destruction or inhibition of microorganisms without harming the animal. Example: ethanol, chlorhexidine, iodine tincture.
Biological risk - encompasses both the likelihood of a disease to appear and its severity, considering that its source is a biological agent or a toxin. The source of the condition may be unintentional exposure, accidental release, or loss, theft, misuse, unauthorized access or release of patients.
Biosecurity - the set of physical and administrative measures taken both inside the institution and at the level of FVM personnel, aimed at reducing the risk of introduction, development and dissemination of infectious agents towards, from or among members of an animal population, unit, area, department, vehicle or any other installations, premises or emplacements.
Biosafety - safety principles, technologies and rules to be followed in order to prevent unintentional and / or accidental exposure to pathogens and toxins or their release into the environment.
Contagious disease - a category of infectious diseases that spread from an infected organism to a receptive one either through direct physical contact or through indirect contact with secretions / excretions or objects contaminated by the host, by aerial or other routes.
Pest control **-** defines the action through which pests are eliminated, such as rodents (mice, rats, moles, squirrels, etc.), by chemical means in particular, or by using ecological poison, poisoning stations, adhesive traps or ultrasound devices. In this way, pests are successfully eliminated without the substances or products used harming pets or humans.
Disinfectant - chemical agent that kills or inhibits the growth of microorganisms on objects, materials, surfaces (surgical equipment, floors, tables, patient care equipment).
Disinfection - names the process by which most or all pathogenic microorganisms are destroyed (in proportion of 99.99%), except for bacterial spores, commonly found on objects in the environment using physical, chemical or biological methods.
Insect control **-** includes the set of methods of controlling insect populations (from different areas), which may carry and subsequently transmit infectious and parasitic diseases to humans and animals, and further capable of causing financial damage by destroying various raw materials, materials, packaging or surfaces.
Personal protectivve equipment - clothing, footwear, mask, goggles that are worn only when working in FVM or in the field, to protect the body from accidents or infections. The hazards that protective equipment must prevent are of a physical, electrical, thermal, chemical and biological nature .
Nosocomial infecction - infection acquired in the hospital, either localized or systemic, which was not present at the time of hospitalization.
Subclinical infection - the invasion of the body by a microorganism, but without manifesting clear clinical signs. It can be the early stage or a very mild form of an infection in which the clinical signs are not apparent or detectable by clinical examination or laboratory tests.
Multiple drug resistance - bacteria that have developed the ability to survive in the presence of several antibiotics. Antimicrobial resistance occurs when bacteria reduce or nullify the effectiveness of drugs, chemicals, or other agents designed to cure or prevent infections. Generally, antibiotics that can kill such bacteria can be toxic to the animal, and their number is limited. Examples of bacteria that have drug-resistant

strains: *Salmonella enterica,* methicillin-resistant *Staphylococcus aureus*, and Vancomycin-resistant *Entercocci.*
Sterilization - the removal of all microorganisms, including bacterial spores, from an inanimate object.
Sterilization **-** the operation by which microorganisms are eliminated or killed, whether they are in a vegetative state or they are sporulated, from contaminated inert objects, the result being the state of sterility.
Infectious substances - substances that are known or reasonably believed to contain pathogens.
Zoonosis - an infection common to humans and other vertebrate animals.

8. REGISTRATIONS

8.1. Forms used

- Standard operating procedure for waste management
  See Annex 5 (document prepared by the Head of Bio-waste Management of FVM)
- Standard operating procedure Personal protection of personnel
  Elaborated according to the documents elaborated by the specialized department of USAMV Bucharest.
- Standard operating procedure Specific rules for emergency response
  Elaborated according to the documents elaborated by the specialized department of USAMV Bucharest.

8.2. Files and registers used

- Files and documents used as annexes to the present biosafety and biosecurity manual

9. LIST OF ANNEXES

- The following annexes are an integral part of this biosafety manual of FVM Bucharest
  - Annex 1. Detergents and disinfectants used in FVM.
  - Annex 2. The antimicrobial spectrum of disinfectants used in FVM
  - Annex 3. Features of the disinfectants used in FVM.
  - Annex 4. Classification of microorganisms based on their biological risk.
  - Annex 5. Standard operating procedure for rodent control, disinsection, cleaning, disinfection, sterilization and waste disposal activities
  - Annex 6. List of communicable animal diseases subject to internal notification
  - Annex 7. Biocidal products included in Product Type 4 approved on the Romanian territory
  - Annex 8. Laboratory procedures for the elimination of dangerous chemicals in the discipline Inspection and control of food of animal origin

10. EVIDENCE OF APPROVALS AND REVISIONS

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R0/ Ed1, 01.10. 2019	Elaboration Edition 1	Bărăităreanu Stelian	Codreanu Mario, DVM, PhD Biosecurity Officer FVM	Predoi Gabriel, DVM, PhD Dean FVM
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R3/Ed1, 01.10. 2020	Revision 3 Edition 1	**Members of the FVM Biosecurity Commission**: Bărăităreanu Stelian Șerban Andreea Irene Tăpăloagă Dana Ciobotaru-Pirvu Emilia Mitrea Liviu Costea Ruxandra Mitranescu Elena Petcu Carmen Georgescu Bogdan Ghiță Marian Gonciarov Magdalena Gurău Maria Negoiță Carmen Purdoiu Letiția Ilie Lucian Duțulescu Alexandru Furnaris Monica Docita Ioan	Codreanu Mario, DVM, PhD Biosecurity Officer FVM	Predoi Gabriel, DVM, PhD Dean FVM
R0/Ed2, 05.02. 2021	Elaboration Edition 2	**Members of the FVM Biosecurity Commission**: Bărăităreanu Stelian Șerban Andreea Irene Tăpăloagă Dana Ciobotaru-Pirvu Emilia Mitrea Liviu Costea Ruxandra Mitranescu Elena Petcu Carmen Georgescu Bogdan Ghiță Marian Gonciarov Magdalena Gurău Maria Negoiță Carmen Purdoiu Letiția Ilie Lucian Duțulescu Alexandru Furnaris Monica Docita Ioan	Codreanu Mario, DVM, PhD Biosecurity Officer FVM	Predoi Gabriel, DVM, PhD Dean FVM

R0/Ed3, ...	Elaboration Edition 3	**Members of the FVM Biosecurity Commission**: Şerban Andreea Irene Tăpăloagă Dana Constantin Tiberiu Gonciarov Magdalena Purdoiu Letiția Ghită Marian Bărăităreanu Stelian Ciobotaru-Pirvu Emilia Codreanu Iuliana Mitrea Liviu Ioniță Lucian Mitranescu Elena Petcu Carmen Tudor Niculae Gurău Maria Dumitrescu Iulian Mocanu Jacqueline Negoiță Carmen Ilie Lucian Duțulescu Alexandru Docita Ioan Furnaris Monica	Codreanu Mario, DVM, PhD Biosecurity Officer FVM	Militaru Manuella, DVM, PhD Interim Dean FMV Chairman of the FMV Biosafety Commission
R0/Ed4, ...	Elaboration Edition 4	Tăpăloagă Dana Tudor Niculae Goran Gheorghe Valentin Roșu Petronela Ţogoe Dorin Gonciarov Magdalena Purdoiu Letiția Ghită Marian Bărăităreanu Stelian Ciobotaru-Pirvu Emilia Codreanu Iuliana Mitrea Liviu Ioniță Lucian Mitranescu Elena Petcu Carmen Gurău Maria Dumitrescu Iulian Mocanu Jacqueline Negoiță Carmen Ilie Lucian Duțulescu Alexandru Docita Ioan Dumitru Florin	Codreanu Mario, DVM, PhD Biosecurity Officer FVM	Militaru Manuella, DVM, PhD Interim Dean FMV Chairman of the FMV Biosafety Commission

Cod: POS-BS-FVM-Ed4-R0-F1-2023

Distribution list procedure	Dean FVM Head of Departments Director of University Clinics

	All FVM staff FVM students

Annex 1.
Detergents and disinfectants used in FVM

(Linton şi colab., 1987, FVM Liege, Belgium)

Disinfectants and their Dilutions	Activity in Organic Material	Spectrum of Activity	Comments
Chlorhexidine 0.05%-0.5% *Used for disinfection of items in contact with skin or mucosal surfaces (e.g., muzzles, endotracheal tubes, etc.)* *Dilutions: 60ml of 2% solution per gallon of water = 0.06% solution* *Soak barrels: gallon of 2% solution per 147.62 l of water = 0.05% solution (90 ml per gallon of water is used in equine anaesthesia for soak barrels)* *Contact time: at least 15 minutes.*	Rapidly Reduced	• Mycoplasmas: Very effective • Mycobacteria: Variable • Gram+ Bacteria: Very effective • Gram– Bacteria: Very effective • *Pseudomonas*: Limited activity • Rickettsiae: Limited activity • Enveloped Viruses: Limited activity • Chlamydiaceae: Limited activity • Non-Enveloped Viruses: No Activity • Fungal Spores: Limited activity • Bacterial Spores: No Activity • Cryptosporidia: No Activity • Prions: No Activity	• Broad antibacterial spectrum but limited effectiveness against viruses. • Used to disinfect materials in close contact with patients (muzzles, endotracheal tubes, etc.) • Easily inactivated by soaps and detergents. • Low toxicity potential; usual dilutions are non-irritating even if contacts with mucosa. • Inactivated by anionic detergents. • Bactericidal activity on skin is faster than many other compounds, including iodophors. • Residual effect on skin diminishes re- growth. • Only function at limited pH (5-7). • Toxic to fish => should not be discharged in the environment.

Disinfectants and their Dilutions	Activity in Organic Material	Spectrum of Activity	Comments
Povidone Iodine *Used for skin decontamination and disinfection (e.g. surgical preparation).*	Rapidly Reduced	• Mycoplasmas: Very effective • Mycobacteria: Limited activity • Gram+ Bacteria: Effective • Gram– Bacteria: Effective • *Pseudomonas*: Effective • Rickettsiae: Effective • Enveloped Viruses: Effective • Chlamydiaceae: Effective: • Non-Enveloped Viruses: Limited activity • Fungal Spores: Effective • Bacterial Spores: Effective • Cryptosporidia: No Activity • Prions: No Activity	• Broad spectrum. • Very low toxicity potential => appropriately diluted solutions are suitable for use on tissues or materials in contact with skin or mucous membranes • People can become sensitized after skin contact. • Dilution of iodophors increases free iodine concentration and antimicrobial activity. • Staining of tissues and plastics can occur. • Stable in storage • Inactivated by organic debris and quaternary ammonium compounds. • Requires frequent application • Corrosive
Alcohol (90% isopropanol or 70% denatured ethanol) *Used to disinfect materials in close contact with people and patients (e.g. muzzles, instruments, hand sanitizing solutions, etc.)*	Reduced	• Mycoplasmas: Very effective • Mycobacteria: Effective • Gram+ Bacteria: Very effective • Gram– Bacteria: Very effective • *Pseudomonas*: Effective • Rickettsiae: Limited activity • Enveloped Viruses: Effective • Chlamydiaceae: Limited activity • Non-Enveloped Viruses: No activity • Fungal Spores: Limited activity • Bacterial Spores: No Activity • Cryptosporidia: No Activity	• Broad spectrum. • Very low toxicity potential => appropriately diluted solutions are suitable for use on tissues or on materials in contact with skin or mucous membranes. • No residual activity on surfaces • Fast acting • Leaves no residue. • Rapid evaporation • Extremely flammable

Disinfectants and their Dilutions	Activity in Organic Material	Spectrum of Activity	Comments
Sodium Hypochlorite (Bleach)* *Used for disinfecting clean surfaces, especially to increase the spectrum of activity of disinfectant.* *Dilutions:* • *1:64 = 60 ml per gallon of water. Appropriate for most applications in FVM* • *1:32 dilution =125 ml (per gallon of water* • *1:10 dilution = 375 ml per gallon of water. Limited use-very strong*	Rapidly Reduced	• Mycoplasmas: Very effective • Mycobacteria: Effective • Gram+ Bacteria: Effective • Gram– Bacteria: Effective • *Pseudomonas*: Effective • Rickettsiae: Effective • Enveloped Viruses: Effective • Chlamydiaceae: Effective • Non-Enveloped Viruses: Effective at higher concentrations • Fungal Spores: Effective • Bacterial Spores: Effective • Cryptosporidia: No Activity • Prions: No Activity	• Broad spectrum. • Relatively low toxicity potential at standard dilutions; higher concentrations or prolonged contact can result in irritation to mucous membranes or skin. • Can be used in the presence of anionic detergents • Not affected by water hardness. • Inexpensive • Bactericidal activity is reduced with increasing pH, lower temperatures, and in the presence of ammonia and nitrogen, which is important to consider when urine is present. Also inactivated by cationic soaps/detergents, sunlight and some metals. • Chlorine gas can be produced when mixed with other chemicals. Strong oxidizing (bleaching) activity that can damage fabric and is corrosive on metals such as sliver, and aluminium (not stainless steel). • Limited stability for stored solutions

Disinfectants and their Dilutions	Activity in Organic Material	Spectrum of Activity	Comments
Quaternary Ammonium Compounds (QACs) *Primary surface disinfectant used in the FVM (spot disinfection as well as general environmental disinfection)* *Dilution: 15ml per gallon of water=1:256* *Contact time: at least 15 minutes*	Moderate	• Mycoplasmas: Effective • Mycobacteria: Variable • Gram+ Bacteria: Very effective • Gram– Bacteria: Effective • *Pseudomonas*: No Activity • Rickettsiae: Limited activity • Enveloped Viruses: Effective • Chlamydiaceae: No Activity • Non-Enveloped Viruses: Limited activity • Fungal Spores: Limited activity • Bacterial Spores: No Activity • Cryptosporidia: No	• Broad spectrum. • Irritation and toxicity is variable among products, but these compounds are generally non-irritating and have low toxicity at typical dilutions • Inactivated by anionic detergents • Some residual activity after drying • More effective at alkaline pH • Less effective in cold temperatures • Stable in storage • Inactivated by hard water • Inactivated by soap/detergents
Oxidizing Agents: Hydrogen Peroxide *Used for disinfecting misting (fogging) and in all disinfectant footbaths in the large animal hospital.* *Dilution: 10 grams per litre of water) is a 1% solution* *Spray bottle: 5 ml powder (5 grams) added to 500 ml water (1% solution)* *Contact time: At least 15 minutes*	Variable in class; very good for peroxymono-sulfate and accelerated hydrogen peroxide	• Mycoplasmas: Very effective • Mycobacteria: Effective • Gram+ Bacteria: Effective • Gram– Bacteria: Effective • *Pseudomonas*: Effective • Rickettsiae: Effective • Env. Viruses: Effective • Chlamydiaceae: Effective • Non-Enveloped Viruses: Limited activity • Fungal Spores: Limited activity • Bacterial Spores: Effective • Cryptosporidia: Limited activity • Prions: No Activity	• Broad spectrum • Products listed have very low toxic potential but can cause skin irritation through drying, especially as powder or in concentrated solutions. • Other compounds not used in FVM can be very toxic (e.g. chlorine dioxide) • No harmful decomposition products • Residual activity on surfaces • Poor lipid solubility • Less active at low temperatures • Corrosive to plain steel, iron, copper, brass, bronze, vinyl • Add powder to water helps in mixing. • Wear a mask and rubber gloves when preparing solution to avoid irritation.

Disinfectants and their Dilutions	Activity in Organic Material	Spectrum of Activity	Comments
Phenols *Used only for disinfection of instruments and necropsy areas that may be contaminated with prions (e.g. bovine spongiform encephalopathy, chronic wasting disease and scrapie).*	Very Good	• Mycoplasmas: Very effective • Mycobacteria: Variable • Gram+ Bacteria: Very effective • Gram– Bacteria: Very effective • *Pseudomonas*: Very effective • Rickettsiae: Effective • Enveloped Viruses: Effective • Chlamydiaceae: Limited activity • Non-Enveloped Viruses: Limited activity • Fungal Spores: Effective • Bacterial Spores: No Activity • Cryptosporidia: No Activity • Prions: Limited activity,	• Broad spectrum • Irritation potential is variable among compounds in this class, but phenolic disinfectant products are generally considered highly irritating and should not be used on surfaces in contact with skin or mucous membranes. • Concentrations over 2% are highly toxic to animals, especially cats. • Activity not affected by water hardness • Some residual activity after drying • Effective over broad pH range • Non-corrosive • Stable in storage

Annex 2.

The antimicrobial spectrum of disinfectants used in FVM

(Linton şi colab., 1987, FVM Liege, Belgium)

Most susceptible	**Chemical Disinfectants**									
	Note : Removal of organic material must always precede the use of any disinfectant									
	Acids (hydrochloric acid, acetic acid, citric acid)	**Alcohols** (ethyl alcohol, isopropyl alcohol)	**Aldehydes** (formaldehyde, paraformaldehyde, glutaraldehyde)	**Alkalis** (sodium or ammonium hydroxide, sodium carbonate)	**Biguanides** (chlorhexidin)	**Halogens**		**Oxidizing Agents** (hydrogen peroxide, peracetic acid)	**Phenolic compounds**	**Quaternary Ammonium compounds (QACs)**
						hypochlorite	iodine			
Mycoplasmas	+	++	++	++	++	++	++	++	++	+
Gram-positive bacteria	+	++	++	+	++	+	+	+	++	++
Gram-negative bacteria	+	++	++	+	++	+	+	+	++	+
Pseudomonas	+	++	++	+	±	+	+	+	++	-
Rickettsiae	±	+	+	+	±	+	+	+	+	±
Enveloped viruses	+	+	++	+	±	+	+	+	±[a]	±
Chlamydiaceae	±	±	+	+	±	+	+	+	±	-

Non-enveloped viruses	-	-	+	±	-	+	±	±	-	-
Fungal spores	±	±	+	+	±	+	+	±	+	±
Picornaviruses (i.e. FMD)	+	N	+	+	N	N	N	+	N	N
Parvoviruses	N	N	+	N	N	+	N	N	N	-
Acid-fast bacteria	-	+	+	+	-	+	+	±	±	-
Bacterial spores	±	-	+	±	-	+	+	+[b]	-	-
Coccidia	-	-	-	+[c]	-	-	-	-	+[d]	-
Prions	-	-	-	-	-	-	-	-	-	-

Legend: ++ highly effective, + effective, ± limited activity, - no activity, N = information not available; [a]varies with composition, [b]peracetic acid is sporicidal, [c]ammonium hydroxide, [d]some have activity against coccidia; FMD = foot and mouth disease virus.

Annex 3.

Features of the disinfectants used in FVM

(Linton și colab., 1987, FVM Liege, Belgium)

Disinfectant category	Alcohols	Aldehydes	Biguanides	Halogens: hypochlorites	Halogens-Iodine compounds	Oxidizing agents	Phenols	QACs
Mechanism of Action	Precipitates proteins Denatures lipids	Denatures proteins Alkylates nucleic acids	Alters membrane permeability	Denatures proteins	Denatures proteins	Denatures proteins and lipids	Denatures proteins Alters cell wall permeability	Denatures proteins Binds phospholipids of cell membrane
Advantages	Fast acting Leaves no residues	Broad spectrum	Broad spectrum	Broad spectrum Short contact time Inexpensive	Stable in storage Relatively safe	Broad spectrum	Good efficacy with organic material Non-corrosive Stable in storage	Stable in storage Non-irritating to skin Effective at high temperatures and high pH (9-10)
Disadvantages	Rapid evaporation Flammable	Carcinogenic Mucous membranes and tissue irritation Only use in well ventilated areas	Effective in a limited pH range (5-7) Toxic to fish (environmental concern)	Inactivated by sunlight Requires frequent application Corrodes metals Mucous membrane and tissue irritation	Inactivated by QACs Requires frequent application Corrosive Stains clothes and treated surfaces	Damaging to some metals	Can cause skin and eye irritation	
Precautions	Flammable	Carcinogenic		Never mix with adds, toxic chlorine gas will be released			May be toxic to animals, especially cats and pigs	
Vegetative bacteria	Effective	Effective	Effective	Effective	Effective	Effective	Effective	
Mycobacteria	Effective	Effective	Variable	Effective		Effective	Variable	Variable
Enveloped viruses	Effective	Effective	Limited	Effective	Effective	Effective	Effective	Variable
Non-enveloped viruses	Variable	Effective	Limited	Effective	Limited	Effective	Variable	Not effective

Spores	Not effective	Effective	Not effective	Variable	Limited	Variable	Not effective	Not effective
Fungi	Effective	Effective	Limited	Effective	Effective	Variable	Variable	Variable
Efficacy with organic matter	Reduced	Reduced	?			Variable	Effective	Inactivated
Efficacy with hard water	?	Reduced	?	Effective	?	?	Effective	Inactivated
Efficacy with soap/detergents	?	Reduced	Inactivated	Inactivated	Effective	?	Effective	Inactivated

Legend: ? = Information not found; QAC = Quaternary Ammonium Compounds

Annex 4.
Classification of microorganisms based on their biological risk

The classification of a microorganism takes into account the risk for health, for the community, and, for animal diseases, the possible economic
impact:

Class of risk 1 (CR1): micro-organisms known as non-pathogenic and not harmful for the environment (or presenting a negligible risk for humans and the environment at the lab scale). The class includes organisms which harmlessness is proven and strains which can be allergens opportunistic pathogens.

Class of risk 2 (CR2): micro-organisms that can cause disease in animals and present, at different levels, one or other of the following characteristics: limited geographical importance, no or weak interspecific transmission, no vectors or carriers. The economic and or veterinary significance is limited. There is usually effective prophylaxis or treatment (TTM) available.

Class of risk 3 (CR3): micro-organisms that can cause serious disease or epidemics in animals. Interspecific diffusion can be important. Some of these pathogens require the implementation of sanitary regulations for species indexed by the authorities of each country concerned. Medical and/or sanitary prophylactic measures are available.

Class of risk 4 (CR4): micro-organisms that cause extremely serious pandemics or epidemics in animals with a very high mortality rate or dramatic economic consequences in the affected farming-regions. Either no medical prophylaxis is available or only one exclusive sanitary prophylaxis is possible or obligatory

Table 1. Examples of micro-organisms according to their classes of risk in humans and animals (FVM Liege, Belgium)

	CR 2		CR 3		CR 4	
Pathogen	**Humans**	**Animals**	**Humans**	**Animals**	**Humans**	**Animals**
Bacteria and similar organisms						
Borrelia burgdorferi	X	X				
Clostridium perfringens	X	X				
Brucella abortus			X	X		
Yersinia pestis			X	X		
Fungi						
Aspergillus fumigatus	X	X				
Candida albicans	X	X				
Coccidioides immitis			X	X		
Histoplasma capsulatum var. capsulatum			X	X		

Parasites						
Fasciola hepatica	X	X				
Toxocara canis	X	X				
Leishmania brasiliensis			X	X		
Taenia solium			X	X		
Viruses						
Feline calicivirus		X				
Equine infectious anaemia virus		X				
Rabies virus			X	X		
Venezuelan equine encephalitis			X	X		
Foot-and-mouth disease						X
Classical swine fever						X

CR = class of risk

Annexe 5.
Standard operating procedure for rodent control, disinsection, cleaning, disinfection, sterilization and waste disposal activities

Document elaborat de:
Lecturer Mărgărita Ghimpețeanu, PhD – Vice-Dean of FVM
Lecturer Tiberiu Constantin, DVM, PhD

Purpose

This procedure establishes the methodology for deratization, disinsection, cleaning, disinfection, sterilization and disposal of waste resulting from teaching / research / medical activity, in accordance with the requirements of the quality standards in force, in the spaces related to FVM Bucharest.

Aplication domain

This procedure is applied within FVM Bucharest and in all departments related to the organization's activity.

Reference and related documents

- Order of the Ministry of Health and Family (MHF) 219 / 04.2002 for the approval of the technical norms regarding the management of waste resulting from medical activities and of the methodology of data collection for the national database on waste resulting from medical activities medical activities.
- Decision no. 856/2002 on waste management records and for the approval of the list of wastes, including hazardous waste
- Order of the Ministry of Health and Family 261/2007 for the approval of the technical norms regarding the cleaning, disinfection, sterilization and keeping the sterility of sanitary objects and materials in the state and private sanitary units
- National Education Law no. 1/2011.

Description of the activity

Deratization

Basements, cellars, food depots and their processing areas, sewerage networks, waste storage areas, veterinary areas, proximity to buildings and related alleys will be subject to this procedure.
The maximum positioning distance of the traps will be 15 m between them.
Raticide traps and substances shall be handled in accordance with the package leaflet and their validity shall be observed.
This action will be performed whenever needed, but not less than 2 treatments per year.

Will use:

- traps that immobilize pests, with limited access for other animals;
- containers with bags for collecting rodent carcasses.

Disinsection

This action will be performed once every 3 months, and in the warm monthly season (in the case of mosquitoes and flies) or whenever necessary.
Non-corrosive substances will be used for certain surfaces or materials.
These substances will be sprayed for the open spaces by atomizers with high working pressure so that the jet formed reaches a height of 4-5 m where they form very fine drops, and for the closed spaces the worms will be used to spray the substances on the walls, floor and ceiling.
Will use:

- Insecticides for flying and crawling insects (Tetramethrin, Permethrin, Cypermethrin, Piperonyl butoxides, Thiamethoxam Z-9 Tricosen, Imidachloride, etc.).
- Vermorel or atomizer for spraying in the form of cold mist or in the form of warm mist the insecticides used.

Cleaning

The purpose of cleaning and disinfection practices is to remove or destroy microorganisms that are potentially pathogenic.
Inadequate cleaning of spaces, equipment, instruments can be involved in the transmission of various diseases.
Technical norms regarding the cleaning and disinfection in the sanitary units represent annex no. 1 to the Order of the Ministry of Health and Family no. 261/2007 for the approval of the technical norms regarding the cleaning, disinfection, sterilization and keeping the sterility of the sanitary objects and materials in the state and private sanitary units.
Cleaning is the most common method of decontamination used in sanitary units, which ensures the removal of microorganisms from surfaces, objects or skin, along with the removal of dust and organic substances.
The correct application of cleaning methods for surfaces, objects and equipment can achieve a decontamination of 95-98% very close to that obtained by disinfection. Cleaning acts on microorganisms, but it does not replace disinfection. Disinfection is the process by which most or all pathogenic microorganisms (98-99%) are destroyed from objects in the inert environment except for bacterial spores.

General methods of cleaning:

- washing
- wiping
- vacuum cleaning
- brushing

By washing, the dust and organic substances are removed by watering, simultaneously with mechanical procedures. The washing power depends on the amount of watering. Washing is done by using hot water and surfactants. Hot water at 35-45ºC has a higher washing power than cold water, because it has a higher emulsifying

and dissolving power. Soaking with hot water (above 55ºC) has the disadvantage of protein coagulation, which makes it adherent to the treated support.
Depending on the medium of treatment, 1-2% calcium carbonate, soap or anionic detergents or products labeled and approved by the Ministry of Health and Family as a disinfectant detergent or product for cleaning and decontamination are added to the hot water.
Effectiveness conditions:

- use of hot water with appropriate chemical qualities and high watering power, by adding optimal amounts of surfactants;
- association of washing with mechanical methods: stirring, brushing, rubbing;
- observance of soaking and washing times;
- washing should be followed by rinsing thoroughly.

Wet wiping of surfaces removes microorganisms. It is practiced for maintaining cleanliness between washes.
Effectiveness conditions:

- use of clean cloths;
- moistening them with fresh solutions of products labeled and approved by MSF as detergent, disinfectant detergent;
- frequent change of cloths and wiping water

Vacuum cleaning is recommended only with wet process vacuum cleaners, whose construction allows their cleaning and disinfection and keeping them dry after use.
Wet **brushing** is a method of cleaning with low effectiveness. Dry sweeping, or shaking, is not recommended in rooms or crowded or crowded places.
Cleaning and disinfection of rooms must always be associated with **ventilation.**
Cleaning is practiced as a method of prophylactic decontamination.

Products used in the cleaning process
Cleaning is done with products labeled by the manufacturer as:

- cleaning products
- detergent-disinfectant products

Soaps

- soft soap - coarse cleaning - tiles, mosaic, etc.

Detergents

- neutral or liquid detergents for: furniture, flooring, dishes and manual washing of textiles
- alkaline detergents or strippers: background maintenance of floors
- acid detergents or descalers: cleaning materials with stone deposits

- detergents-disinfectants or cationic detergents: cleaning action and secondary disinfection

Abrasives

- for hard surfaces, sanitary floors

Polishing products

- polishing or waxing detergents: washing the floor

Fundamental rules in the use of products used in the cleaning activity

- Use of products approved / authorized by MHF for the health sector
- Comply with all the manufacturer's recommendations
- Observance of labor protection norms
- Labeling and sealing of containers
  - the name of the product and the family to which it belongs
  - terms of validity
  - working dilution
  - the date on which the working dilution was made
  - the period of use of the diluted product maintained in adequate conditions
  - mixing of products is NOT allowed
  - it is NOT permitted to use food packaging for cleaning products
  - distribution of products at the place of use in the original packaging
  - ensuring the rotation of stocks in order to comply with the validity term
  - empty packaging is NOT allowed until after it has been cleaned or neutralized

Cleaning maintenance material

The cleaning maintenance material must be used in compliance with the hygiene rules in order for the cleaning and disinfection operations to achieve their purpose, that of eliminating microorganisms.

Periodic training of cleaning maintenance personnel is recommended.

Brooms, brushes, tees, mops

- removes dust and debris from the floor

Vacuum cleaner

Accessory

- household gloves

Washing materials

- utensils for washing vertical surfaces
- washcloths, abrasive sponges

Maintenance rules for cleaning utensils

Every day, after each cleaning operation and at the end of the working day, the utensils used will be washed, cleaned, disinfected and dried.

Personnel performing cleaning and decontamination of cleaning material will wear non-sterile household or latex gloves.

Decontamination (cleaning and disinfection) of cleaning material:

- the recyclable soft material used is washed with warm water and detergent, rinsed, disinfected by immersion, squeezed and dried;
- is used at least once a week.

Main techniques for maintaining surface cleaning and disinfection

Maintenance of floor cleaning and disinfection

- daily cleaning to remove dust from the floor by vacuuming followed by washing
- aims to remove dust and garbage scattered on the floor with a vacuum cleaner - removes 90% of dust
- methods:
  - by suction
  - by rotating or pivoting - rotate the brush describing "s" on the floor
- washing the floor
- aims to remove dirt and reduce the number of microorganisms on the floor
- method of the 2 buckets (washing, rinsing)
  - periodic cleaning - is performed once a month

Maintenance of cleaning and disinfection of vertical surfaces

The vertical surfaces are represented by:

- tiled walls
- PVC walls
- Windows

They can be soiled by the projection of biological liquids or contamination by touch with a dirty hand

The walls are washed daily with detergent only in the areas of contact with the hands

Method

- dusting the walls
- wash on areas performing movements from bottom to top

- rinse the washed surface with water
- dry

Maintenance of cleaning and disinfection on corridors, hallways, stairs, locker rooms
Cleaning is done several times a day depending on how busy the area is
Daily

- corridors
  - dust the floor, furniture, doors
  - wets moist
  - wash the floor
  - rinse
  - wipe with a disinfectant solution
- stairs
  - dust the stairs
  - the railings are dusted
  - wash the steps

Periodic

- corridors
  - weekly
  - Quarterly
    - vents
    - ceiling, lighting fixtures

Maintenance of cleaning and disinfection of toilets
Sanitary ware: sink, toilets, etc. are places where there is moisture. their maintenance and disinfection is the basis for the prevention of infections with Pseudomonas spp., Proteus spp., Tricomonas spp. etc.
Maintenance is daily
Method:

- cloth soaked in disinfectant detergent solution
- clean the tiles on the walls
- the sanitary objects are cleaned starting with the lower part of the sanitary objects
- rinse
- apply the disinfectant solution
- a contact time is allowed
- Rinse thoroughly

Flower pots and cut flower pots are not allowed

Disinfection

Disinfection is the subject of annex no. 1 to the **Order of the Ministry of Health and Family no. 261/2007 for the approval of the technical norms regarding the cleaning, disinfection, performing the sterilization and keeping the sterility of the sanitary objects and materials in the state and private sanitary units**

Disinfection is applied in cases where cleaning does not eliminate the risks of spreading the infection, and sterilization is not necessary.

In any disinfection activity, work protection measures must be applied to prevent accidents and intoxications.

Disinfection can be achieved by physical means: dry heat (flaming, incineration), wet heat (pasteurization, boiling), ultraviolet ray and by chemical means.

Disinfection by chemical means is performed using chemical disinfectants that are composed of chemicals from the following classes:

- halogens (chlorine-releasing compounds or solutions)
- alcohol

Disinfection by physical means

- by heat - dry - buckling - instruments in laboratories
  -incineration- for contaminated objects
- wet - pasteurization - for liquids at temperatures between 55-95ºC
- disinfection by washing at a temperature of 60-95ºC -adding the action of detergents - linen, dishes, glassware, etc.
- boiling in water at 100ºC
- with ultraviolet rays - smooth surfaces, air in the speakers, other enclosed spaces

Disinfection by chemical means

it is made by using chemical disinfectants.

The classification of disinfection (adapted according to CMC) is based on the type of **pathogenic microorganisms** destroyed and takes into account the contact time required for disinfectants to destroy microorganisms. It is classified into four levels:

-chemical sterilization - destroys all microorganisms and a large number of bacterial spores
- the contact time is a few hours
- substances - glutaraldehyde, stabilized hydrogen peroxide, peracetic acid

-high-level disinfection - destroys all microorganisms, except a large number of bacterial spores
- contact time of at least 20 minutes
- substances - glutaraldehyde, stabilized hydrogen peroxide, peracetic acid, sodium hypochlorite

-medium level disinfection - realizes the destruction of Mycobacterium tuberculosis, of bacteria in vegetative form, of most viruses and fungi but not of bacterial spores.
- contact time is 10 minutes
- substances - phenols, iodophors, alcohols, chlorine-based compounds

-low level disinfection - achieves the destruction of most bacteria in vegetative form, some viruses and fungi but not resistant microorganisms, such as Mycobacterium tuberculosis and bacterial spores.

- contact time is 10 minutes
- disinfectants containing phenols, iodophores, quaternary ammonium substances and foaming agents, alcohols, sodium hypochlorite.

FACTORS THAT INFLUENCE DISINFECTION

- Spectrum of activity and germicidal power
- Number of microorganisms on treated support
- The amount of organic material on the equipment / support to be treated
- The nature of the treaty support
- Concentration of disinfectant
- Contact time and temperature
- Susceptibility of chemical disinfectants to inactivation
- Type of antimicrobial activity: bactericidal or bacteriostatic
- The effect of pH
- Stability of the product as such or as a working solution
- Corrosivity
- Toxicity
- Product cost

CRITERIA FOR CHOOSING DISINFECTANTS

- Effectiveness
- Ease in preparing and applying solutions and in storing substances and products
- Economy
- Lack of corrosivity and destructive effects
- Knowledge of the toxicity of disinfectants under the conditions of use and of the recommended protection measures

GENERAL RULES OF DISINFECTION PRACTICE

Prophylactic disinfection completes the cleaning, but does not replace it and cannot replace sterilization.
For disinfection in the outbreak, disinfectants with action on the incriminated or presumed pathogen are used.
Only disinfectants approved by the Ministry of Health and Family should be used
Chemical disinfection Disinfectants with a spectrum of bactericidal, virulicidal, fungicidal and / or sporicidal action must be used.
It is periodically recommended to alternate disinfectants, in order to avoid the appearance of microorganisms resistance.
Disinfectants should be used at the concentrations of use and action times recommended by the manufacturer.
It is recommended to use vats with lids and grills to disinfect the instruments.

The use of disinfectants is made respecting the labor protection norms
Training staff on the use of disinfectants.

Sterilization

The organization of the actual sterilization activities, as well as the related activities (washing, decontamination and packaging, storage and delivery) will take into account the need to observe the circuits, to avoid control gaps during their realization and to use other spaces than those designated, central sterilization service.

STERILIZATION AT THE HOT AIR STERILIZER (pupinel, oven)

Sterilize glassware and instruments that do not support pressurized steam sterilization.

It is totally contraindicated for textiles, liquids and rubber.

Phases of sterilization:

- heating the appliance - the time interval between starting the appliance and starting the temperature rise
- latency (homogenization) - the time interval in which the propagation and increase of the temperature takes place in order to reach the sterilization temperature in the metal boxes / packages from the baskets
- sterilization - 180°C -1h
- cooling

Sterilization time is measured from the moment of the sterilization temperature is reached inside the load.

Never open the hot air sterilizer during the sterilization period to introduce new packages.

Duration of maintaining sterility

- 2 weeks for materials packed in paper, provided they maintain their integrity.

At the end of the complete sterilization cycle

- Do not open the appliance until the temperature is below 50°C
- The sterilization efficiency indicators are checked
    - adhesive tapes with physico-chemical indicators
    - physico-chemical indicators "integrators"
- Medical devices and sterilized materials are labeled for identification. Write down the date, time, cycle and the person performing the sterilization.
- It is noted in the sterilization logbook: date, contents of the boxes, temperature at which the sterilization was performed, duration, results of physical-chemical indicators, signature of the person responsible for sterilization, observations.

Evaluation of the sterilization effectiveness of the hot air sterilizer

-for each cycle it reads:

- temperature and it is noted in the sterilization logbook
-changing the color of the physical-chemical indicator on the box
-changing the color of the "integrator" indicator for the hot air sterilizer, which is placed inside the metal boxes.

- the phases of the sterilization process are controlled, the time / temperature graph of the complete sterilization cycle, with the device loaded with the quantity recommended by the manufacturer.

-biological indicator with *Bacillus subtilis* to control the sterilization efficiency.

PRESSURE STEAM STERILIZATION (autoclave)

Sterilization phases

- pre-treatment and preheating phase (pre-foaming) - several sequences of steam inlet and evacuation and aims to remove the air from the material to be sterilized simultaneously with its necessary wetting before the sterilization phase.

-sterilization phase - the sterilization time is measured from the moment the sterilization temperature is reached

-2 atmospheres - 134ºC - 20 min.-infected

-1.1 atm. -121ºC - 20 min.- culture media

At the end of the complete sterilization cycle

Never open the steam sterilizer under pressure until the temperature is below 86ºC.

Baskets with sterilized material are temporarily stored on a surface specially designed for sterile material and are arranged in cabinets specially designed for storage of sterile material.

Sterilization efficiency indicators:

- Bag-ChemoStrip chemical tests (134, 121 ° C) at each sterilization cycle.
- biological indicators-EZ Test once a month

Duration of maintaining sterility

- 2 weeks for materials packed in paper

Condition - maintaining the integrity of the packaging

Evaluation of sterilization effectiveness

- for each cycle it is read;
- temperature and pressure
- changing the color of the physical-chemical test
- autoclave maintenance - recommended by the manufacturer

After any intervention on the autoclave, it is recommended:

-c hecking the temperature and pressure

The specific norms of labor protection in the field of health are observed.

MHF-approved devices are used.

Technical working instructions are elaborated and displayed on the wall.

The nurse responsible for sterilization is trained and accredited to work with the steam sterilizer under pressure.

CONDITIONS FOR MAINTAINING THE STERILITY OF THE STERILIZED MATERIAL

Metal baskets with sterilized material are stored in sterile cabinets. They are removed from the cabinet only at the time of use, any additional handling creates contamination conditions.

Waste resulting from teaching / research / medical activities

One of the effective methods of infection control is the management of the resulting waste, ie the way it is collected, packaged, temporarily stored and disposed of. These regulations are the subject of the **Order of the Ministry of Health and Family no. 219 - 2002** for the approval of the technical norms regarding the management of waste resulting from medical activities and of the methodology of data collection for the national database regarding the waste resulting from medical activities.

The waste resulting from medical activities is non-hazardous and hazardous waste, which occurs in FVMB. On practical criteria it is classified in:

- non-hazardous waste
- hazardous waste

Non-hazardous waste – is waste whose composition is similar to that of household waste and which does not pose a major risk to human health and the environment. They result from the activity of technical-medical, administrative, etc. medical services. This waste is disposed of in the same way as household waste. The following categories are included:

-packaging of sterile materials
-thread
-food leftovers
-bags and other plastic packaging, glass containers that have not come into contact with blood or biological products

Hazardous waste - is waste resulting from medical activities that pose a risk to human health and the environment :.

- **Infectious waste** is liquid and solid waste that contains or is contaminated with blood or other biological fluids as well as materials that contain or have come in contact with viruses, bacteria, parasites and / or toxins of microorganisms. They include:

  - syringes
  - containers that contained blood or other biological fluids
  - gloves
  - dressing, bandages
  - plastic container for collecting urine
  - used laboratory materials etc.

- stinging waste - cutting - are the waste that can cause mechanical damage by stabbing or cutting. They include:

  - needles
  - scalpel blades

This waste is considered infectious waste.

-chemical waste - are solid, corrosive or flammable chemicals.

They include:

  - chemical residues
  - laboratory glassware
  - broken glassware or not that came in contact with infectious material
  - reagents and substances used in the laboratory
  - damaged cleaning and disinfection substances

The names of the waste categories defined above are corresponding to the following names from the **European Waste Catalog contained in Government Decision no. 856/2002:**

- -non-hazardous waste corresponds to code **18 01 04** are wastes whose collection and disposal are not subject to special measures regarding infections.
- -infectious wastes correspond to code **18 01 03** are wastes whose collection and disposal are subject to special measures for the prevention of infections
- -stinging-cutting waste corresponds to code **18 01 01**
- -chemical wastes correspond to code **18 01 05**

WASTE COLLECTION AND PACKAGING

The collection and separation of waste by categories represents a first stage in the management of waste resulting from medical activities and is performed at the place of production. If this separation of waste into categories is not achieved, the entire amount of waste is treated as hazardous waste.

The packaging in which the collection is made and which comes in direct contact with hazardous waste is disposable and is disposed of with the contents.

These packages, depending on the waste category, have a color code:

-yellow -for hazardous waste
-black - for non-hazardous waste

The "Biological Hazard" icon is used for infectious and stinging waste.

Infectious waste is collected in yellow polyethylene bags marked with the icon. The bags must be made of high density polyethylene to have high mechanical strength and not allow liquid to leak. The bag must close easily and securely. The dimensions of the bag are adequate to the amount of waste collected. The degree of filling of the bag shall not exceed three quarters of its volume. The bag is inserted in the bins provided with a lid.

The cutting-stinging waste is collected in boxes made of material resistant to mechanical actions. The boxes are provided at the top with a special lid that allows the introduction of waste and prevents its removal after filling, being provided with a final closure system. The boxes are equipped with a sturdy handle to be easily transported to the storage place. The boxes are approved by the Ministry of Health and Family. They must be waterproof, watertight, without the possibility of contamination of the personnel who handle them and be inscribed.

The second packaging in which the bags are deposited is represented by mobile containers with rigid walls located in the temporary storage space. They are inscribed "Medical waste" and bear the appropriate icon. They are easily washable and resistant to the action of disinfectant solutions. The airtight container provided with a fastening system adapted to the automatic pick-up system in the transport vehicle. It is forbidden to deposit unpackaged hazardous waste.

Stickers with the identification data of the waste production source are pasted on the packaging.

TEMPORARY STORAGE

It is made according to the categories of waste collected at the place of production, existing with yellow cardboard boxes and yellow plastic boxes inscribed with the icon <BIOLOGICAL HAZARD>.

The central space for temporary storage of medical waste is a site for temporary storage of medical waste, arranged inside the Clinic of the Faculty of Veterinary Medicine Bucharest, intended exclusively for temporary storage of waste until it is discharged for disposal.

The space is provided with a locked door, a controlled temperature of 4 °C, easy to disinfect and deratize and without use for other waste or other purposes.

It is forbidden the access of unauthorized persons in the space intended for temporary storage.

The maximum duration of waste storage is 48 hours, after which they are taken over, on a contract basis, by specialized economic operators and authorized for disposal.

Animal by-products not intended for human consumption resulting from teaching and research are stored in cold rooms at -20 °C.

Waste assimilated to household waste is stored and disposed of according to Government Emergency Ordinance no. 78/2000 and Law no. 426/2001.

TRANSPORTATION OF MEDICAL WASTE produced by the Clinic of the Faculty of Veterinary Medicine Bucharest, inside the unit where they were produced is done on a separate circuit from that of the owners with patients, daily between 6: 30-7: 00, with the help of mobile containers that it is cleaned and disinfected after each use in the place where the unloading takes place.

FINAL ELIMINATION

The transport of hazardous medical waste outside the unit in which it was produced is carried out on the basis of a contract with the economic operators authorized to carry out this activity - the unit producing medical waste.

EVIDENCE OF THE QUANTITIES OF WASTE PRODUCED

Each producer is obliged to register the quantities of waste produced. There are identification forms for the transport and final disposal of hazardous adhesives that leave the unit. These forms are completed in three copies by the manufacturer and the carrier upon delivery - receipt of each shipment. One remains with the manufacturer and two with the carrier. After the final disposal, a copy remains with the agent who carried out the final disposal, and the third returns to the manufacturer.

The identification form for transport and final disposal contains the following data:

- identification data for the producing unit and the economic agents providing services;
- the quantities of hazardous waste sent;
- date and time for each stage;
- the names and signatures of those responsible for each stage;
- final elimination procedure.

PERSONNEL EDUCATION AND TRAINING

The unit is obliged to ensure the education and training of the personnel regarding the management of the waste resulting from the medical activity.

The staff needs to know:

- the type and quantities of waste produced in the unit;
- risks to the environment and human health at each stage of the waste disposal cycle;
- the waste management plan resulting from the medical activity.

IN THE FIELD OF WASTE MANAGEMENT RESULTING FROM MEDICAL ACTIVITIES

The teachers / doctors / auxiliary staff carry out their activity in the faculty have the following responsibilities;

- supervises how the procedure is applied;
- applies the procedures stipulated by the procedure;
- apply the procedure for determining the quantities produced by types of waste;

Responsibilities

Head of Departments / Head of Clinics / Chief Administrator

- ensures the observance of the infectious waste circuits
- ensures compliance with cleaning programs
- supervises disinfection and sterilization activities

Auxiliary staff

- observance of the circuits; infectious waste
- validates the performance of cleaning programs
- carries out disinfection and sterilization activities

Records

Logbook for cleaning records

Annex 6.

List of communicable diseases of animals subject to internal notification

The veterinary sanitary norm regarding the internal notification and the official declaration of some transmissible animal diseases, Order of the President of ANSVSA no 19/March 19, 2010, published in the OFFICIAL GAZETTE no. 283 of April 30, 2010,

Boli comune mai multor specii de animale	**I. Multiple species diseases**	**I. Maladies d'espèces multiples**
1. Antrax	1. Anthrax	1. Anthrax
2. Boala Aujeszky	2. Aujeszky' s disease	2. Maladie d'Aujeszky
3. Boala limbii albastre/Bluetongue	3. Bluetongue	3. Fièvre catarrhale du mouton
4. Brucelozele animalelor - *Brucella abortus/Brucella melitensis/Brucella suis*	4. Animal brucellosis - *Brucella abortus/Brucella melitensis/Brucella suis*	4. Brucellose animale - *Brucella abortus / Brucella melitensis / Brucella suis*
5. Febra hemoragică de Crimeea Congo/Boala de Crimeea Congo	5. Crimean Congo haemorrhagic fever	5. Fièvre hémorragique de Crimée-Congo
6. Echinococoza/Hidatidoza	6. Echinococcosis/Hydatidosis	6. Échinococcose / hydatidose
7. Boala hemoragică epizootică	7. Epizootic haemorrhagic disease	7. Maladie hémorragique épizootique
8. Encefalomielita ecvină de Est	8. Eastern equine encephalomyelitis	8. Encéphalomyélite équine orientale
9. Febra aftoasă	9. Foot and mouth disease	9. Fièvre aphteuse
10. Pericardita exsudativă infecţioasă	10. Heartwater	10. Heartwater
11. Encefalita japoneză	11. Japanese encephalitis	11. Encéphalite japonaise
12. Leptospirozele	12. Leptospirosis	12. Leptospirose
13. Boala produsă de *Cochlioymia hominivorax*	13. New world screwworm (*Cochliomyia hominivorax*)	13. Nouveau ver à vis du monde (*Cochliomyia hominivorax*)
14. Boala produsă de *Chrisomia bezziana*	14. Old world screewworm (*Chrysomya bezziana*)	14. Screewworm de l'Ancien Monde (*Chrysomya bezziana*)
15. Paratuberculoza	15. Paratuberculosis	15. Paratuberculose
16. Febra Q	16. Q fever	16. Fièvre Q
17. Rabia	17. Rabies	17. Rage
18. Febra Văii Rift	18. Rift Valley fever	18. Fièvre de la vallée du Rift
19. Pesta bovină	19. Rinderpest	19. Peste bovine
20. Tripanosomiază/*Trypanosoma*	20. Surra (*Trypanosoma evansi*)	20. Surra (*Trypanosoma evansi*)

Evansi		
21. Trichineloza	21. Trichinelosys	21. Trichinelosys
22. Tularemia	22. Tularemia	22. Tularémie
23. Stomatita veziculoasă	23. Vesicular stomatitis	23. Stomatite vésiculaire
24. Febra Nilului de Vest	24. West Nile fever	24. Fièvre de West Nile
II. Boli specifice bovinelor	**II. Bovine diseases**	**II. Maladies bovines**
1. Anaplasmoza	1. Bovine anaplasmosi	1. Anaplasmose bovine
2. Babesioza	2. Bovine babesiosis	2. Babésiose bovine
3. Campilobacterioza genitală	3. Bovine genital campylobacteriosis	3. Campylobactériose génitale bovine
4. Encefalopatia spongiformă	4. Bovine spongiform encephalopathy	4. Encéphalopathie spongiforme bovine
5. Tuberculoza bovină	5. Bovine tuberculosis	5. Tuberculose bovine
6. Diareea virală	6. Bovine viral diarrhea	6. Diarrhée virale bovine
7. Pleuropeneumonia contagioasă	7. Contagious bovine pleuropneumonia	7. Péripneumonie contagieuse bovine
8. Leucoza enzootică	8. Enzootic bovine leucosis	8. Leucose bovine enzootique
9. Septicemia hemoragică	9. Haemorrhagic septicemia	9. Septicémie hémorragique
10. Rinotraheita/Vulvovaginita pustuloasă infecţioasă	10. Infectious bovine rhinotracheitis/infectious pustular vulvovaginitis	10. Rhinotrachéite infectieuse bovine / vulvovaginite pustuleuse infectieuse
11. Dermatoza nodulară virotică	11. Lumpky skin disease	11. Dermatose nodulaire contagieuse
12. Teilerioza	12. Theileriosis	12. Théilériose
13. Trichomonoza	13. Trichomonosis	13. Trichomonose
14. Tripanosomiaza	14. Trypanosomosis	14. Trypanosomose
III. Boli specifice ovinelor şi caprinelor	**III. Sheep and goat diseases**	**III. Maladies des ovins et caprins**
1. Artrita/Encefalita caprinelor	1. Caprine arthritis/encephalitis	1. Arthrite / encéphalite caprine
2. Agalaxia contagioasă	2. Contagious agalactia	2. Agalactie contagieuse
3. Pleuropeneumonia contagioasă a caprinelor	3. Contagious caprine pleuropneumonia	3. Pleuropneumonie contagieuse caprine
4. Avortul enzootic al ovinelor/Chlamidioza ovină	4. Enzootic abortion of ewes (Ovine chlamydiosis)	4. Avortement enzootique des brebis (chlamydiose ovine)
5. Maedi Visna	5. Maedi-Visna	5. Maedi-Visna

6. Boala de Nairobi a ovinelor	6. Nairobi sheep disease	6. Maladie du mouton de Nairobi
7. Epididimita berbecilor	7. Ovine epididymitis (*Brucella ovis*)	7. Épididymite ovine (*Brucella ovis*)
8. Pesta micilor rumeg ătoare	8. Peste de petits ruminants	8. Peste de petits ruminants
9. Salmonelozele	9. Salmonellosis (*S.* abortus ovis)	9. Salmonellose (*S. abortus ovis*)
10. Scrapie	10. Scrapie	10. Tremblante
11. Variola ovină şi caprină	11. Sheep pox and goat pox	11. Clavelée et variole caprine
IV. Boli specifice ecvinelor	**IV. Equine diseases**	**IV. Equine diseases**
1. Pesta african ă a calului	1. African horse sickness	1. Peste équine africaine
2. Metrita contagioasă	2. Contagious equine metritis	2. Métrite contagieuse équine
3. Durina	3. Dourine	3. Dourine
4. Encefalomielita ecvină de vest	4. Western Equine encephalomyelitis	4. Encéphalomyélite équine occidentale
5. Anemia infecţioasă	5. Equine infectious anaemia	5. Anémie infectieuse équine
6. Influenţa	6. Equine influenza	6. Grippe équine
7. Piroplasmoza	7. Equine piroplasmosis	7. Piroplasmose équine
8. Rinopneumonia	8. Equine rhinopneumonitis	8. Rhinopneumopathie équine
9. Arterita virală	9. Equine viral arteritis	9. Artérite virale équine
10. Morva	10. Glanders	10. Glanders
11. Encefalita ecvină venezueleană	11. Venezuelean equine encephalomyelitis	11. Encéphalomyélite équine vénézuélienne
V. Boli specifice suinelor	**V. Swine diseases**	**V. Maladies porcines**
1. Pesta porcină africană	1. African swine fever	1. Peste porcine africaine
2. Pesta porcină clasică	2. Classical swine fever	2. Peste porcine classique
3. Encefalita cu virusul Nipah	3. Nipah virus encephalitis	3. Encéphalite à virus Nipah
4. Cisticercoza	4. Porcine cysticercosis	4. Cysticercose porcine
5. Sindromul reproductiv şi respirator	5. Porcine reproductive and respiratory syndrome	5. Syndrome reproductif et respiratoire du porc
6. Boala veziculoasă	6. Swine vesicular disease	6. Maladie vésiculeuse du porc
7. Gastroenterita transmisibilă	7. Transmissible gastroenteritis	7. Gastro-entérite transmissible
VI. Boli specifice păsărilor	**VI. Avian diseases**	**VI. Maladies aviaires**
1. Chlamidioza	1. Avian chlamydiosis	1. Chlamydiose aviaire
2. Bronşita infecţioasă	2. Avian infectious bronchitis	2. Bronchite infectieuse aviaire
3. Laringotraheita infecţioasă	3. Avian infectious laryngotracheitis	3. Laryngotrachéite infectieuse

		aviaire
4. Micoplasmoza produsă de *M. gallisepticum*	4. Avian mycoplasmosis (*M. gallisepticum*)	4. Mycoplasmose aviaire (*M. gallisepticum*)
5. Micoplasmoza produsă de *M. synoviae*	5. Avian mycoplasmosis (*M. synoviae*)	5. Mycoplasmose aviaire (*M. synoviae*)
6. Hepatita virală a raţelor	6. Duck virus hepatitis	6. Hépatite virale du canard
7. Holera	7. Fowl cholera	7. Choléra aviaire
8. Tifoza	8. Fowl typhoid	8. Typhoïde aviaire
9. Gripa aviară de înaltă şi joasă patogenitate	9. Highly pathogenic avian influenza and low pathogenic avian influenza	9. Influenza aviaire hautement pathogène et grippe aviaire faiblement pathogène
10. Bursita infecţioasă	10. Infectious bursal disease	10. Bursite infectieuse
11. Boala Marek	11. Marek's disease	11. Maladie de Marek
12. Boala de Newcastle	12. Newcastle disease	12. Maladie de Newcastle
13. Puloroza	13. Pullorum disease	13. Maladie de Pullorum
14. Rinotraheita curcilor	14. Turkey rhinotracheitis	14. Rhinotrachéite de la Turquie
VII. Boli specifice leporidelor	**VII. Lagomorph diseases**	**VII. Maladies lagomorphes**
1. Mixomatoza	1. Myxomatosis	1. Myxomatose
2. Boala hemoragică a iepurilor	2. Rabbit haemorrhagic disease	2. Maladie hémorragique du lapin
VIII. Boli specifice albinelor	**VIII. Bees diseases**	**VIII. Maladies des abeilles**
1. Acarioza	1. Acarapisosis of honey bees	1. Acarapisose des abeilles mellifères
2. Loca americană	2. American foulbrood of honey bees	2. Loque américaine des abeilles mellifères
3. Loca europeană	3. European foulbrood of honey bees	3. Loque européenne des abeilles mellifères
4. Atacul gândacului mic de stup	4. Small hive beetle infestation	4. Infestation par le petit coléoptère des ruches
5. Tropilelapsoza	5. Tropilaelaps infestation of honey bees	5. Infestation d'abeilles mellifères par Tropilaelaps
6. Varooza	6. Varroosis of honey bees	6. Varroose des abeilles mellifères
IX. Bolile specifice peştilor	**IX. Fish diseases**	**IX. Maladies des poissons**
1. Necroza hematopoietică epizootică	1. Epizootic haematopoietic necrosis	1. Nécrose hématopoïétique épizootique
2. Necroza hematopoietică infecţioasă (NHI)	2. Infectious haematopoietic necrosis	2. Nécrose hématopoïétique infectieuse

3. Viremia de primăvară a crapului	3. Spring viraemia of carp	3. Virémie printanière de la carpe
4. Septicemia hemoragică virală la salmonide	4. Viral haemorrhagic septicaemia	4. Septicémie hémorragique virale
5. Anemia infecţioasă a somonului	5. Infectious salmon anaemia	5. Anémie infectieuse du saumon
6. Sindromul epizootic ulcerativ	6. Epizootic ulcerative syndrome	6. Syndrome ulcératif épizootique
7. Girodactiloza - infestaţia cu *Gyrodactylus salaris*	7. Gyrodactylosis (*Gyrodactylus salaris*)	7. Gyrodactylose (*Gyrodactylus salaris*)
8. Boala iridovirală a plăticii roşii de mare	8. Red sea bream iridoviral disease	8. Maladie iridovirale de la dorade rouge
9. Virusul herpetic al crapului koi	9. Infection with Herpes virus of the koi carp	9. Infection par le virus de l'herpès de la carpe koi
X. Bolile specifice crustaceelor	**X. Crustacean diseases**	**X. Maladies des crustacés**
1. Sindromul Taura	1. Taura syndrome	1. Syndrome de Taura
2. Boala petelor albe	2. White spot disease	2. Maladie des points blancs
3. Boala capului galben	3. Yellow head disease	3. Maladie de la tête jaune
4. Necroza epizootică hematopoietică	4. Infectious hypodermal and haematopoietic necrosis	4. Nécrose hypodermique et hématopoïétique infectieuse
5. Infecţia cu *Aphanomyces astaci*	5. Crayfish plaque (*Aphanomyces astaci*)	5. Plaque d'écrevisses (*Aphanomyces astaci*)
6. Mionecroza infecţioasă	6. Infectious myonecrosis	6. Myonécrose infectieuse
7. Boala cozii albe	7. White tail disease	7. Maladie de la queue blanche
XI. Bolile specifice moluştelor	**XI. Mollusc diseases**	**XI. Maladies des mollusques**
1. Bonamioza - infecţia cu *Bonamia ostreae*	1. Infection with *Bonamia ostreae*	1. Infection à *Bonamia ostreae*
2. Bonamioza - infecţia cu *Bonamia exitiosa*	2. Infection with *Bonamia exitiosa*	2. Infection à *Bonamia exitiosa*
3. Marteilioza - infecţia cu *Marteilia refringens*	3. Infection with *Marteilia refringens*	3. Infection à *Marteilia refringens*
4. Perkinsoza - infecţia cu *Perkinsus marinus*	4. Infection with *Perkinsus marinus*	4. Infection par *Perkinsus marinus*
5. Perkinsoza - infecţia cu *Perkinsus olseni*	5. Infection with *Perkinsus olseni*	5. Infection à *Perkinsus olseni*
6. Infecţia cu *Xenohaliotis californiensis*	6. Infection with *Xenohaliotis californiensis*	6. Infection à *Xenohaliotis californiensis*
7. Infecţia cu Herpes virus	7. Infection with Herpes virus	7. Infection par le virus de l'herpès
8. Infecţia cu Microcytos mackini	8. Infection with Microcytos mackini	8. Infection par *Microcytos mackini*

XII. Bolile specifice amfibienilor	**XII. Amphibians diseases**	**XII. Maladies des amphibiens**
1. Infecţia cu *Batrachochytrium dendrobatidis*	1. Infection with *Batrachochytrium dendrobatidis*	1. Infection à *Batrachochytrium dendrobatidis*
2. Infecţia cu Ranavirus	2. Infection with Ranavirus	2. Infection par Ranavirus
XIII. Alte boli	**XIII. Other diseases**	**XIII. Autres maladies**
Variola cămilelor	1. Camel pox	1. Variole du chameau
2. Leishmanioza	2. Leishmaniosis	2. Leishmaniose

Annex 7.
Biocidal products included in Product Type 4 approved on the Romanian territory

Trade name	Active substance	**Concentration (% g; v; g / v)**	**Biocidal efficacy / Observations**
AIRSPEXX	-Hydrogen peroxide -Peracetic acid	1.70 0.01	bactericidal fungicidal surfaces
AJAX PURE HOME SAGE & ELDERFLOWER	L(+) lactic acid	1.3g/100g	bactericidal surfaces and pipeline
AJAX PURE HOME SAGE& APPLE BLOSSOM	L(+) lactic acid	1.3g/100g	bactericidal surfaces and pipeline
AJAX PURE HOME SPRAY SAGE & APPLE BLOSSOM	L(+) lactic acid	3.2 g/100g	bactericidal surfaces and pipeline
AJAX PURE HOME SPRAY SAGE & ELDERFLOWER	L(+) lactic acid	3.2 g/100g	bactericidal surfaces and pipeline
ALCODES WIPES	- Ethanol - Glutaral	76.80 0.02	* surfaces
ALCOSAN VT 10	-Propan-2-ol - Didecyldimethylammonium chloride	25.0 0.012	bactericidal yeasticide surfaces
ALDEZIN	- Glutaral - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - Didecyldimethylammonium chloride	18 5 5	bactericidal fungicidal yeasticide virucidal surfaces
ANTI - GERM FOAM BD QF	Bis (aminopropyl) laurylamine	15 g/kg	bactericidal yeasticide surfaces
ANTIBACTER	Didecyldimethylammonium chloride	0.35%	bactericidal fungicidal surfaces
ANTI-GERM® SR C 50 (Alte denumiri comerciale: ANTI –GERM FOAM CL-K52)	Sodium hypochlorite	5.2	bactericidal surfaces
ANTISEPT RD PLUS	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	7.5	bactericidal yeasticide surfaces
APESIN AP 3	Didecyldimethylammonium chloride	5.25	*

APESIN COMBI DR	N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	7.5	bactericidal fungicidal surfaces
AQUAZIX Plus Ag	Hydrogene peroxide Silver	500g/kg 0.38g/kg	bactericidal fungicidal surfaces
ARCANA® ACID COMBI	Didecyldimethylammonium chloride	15.40	bactericidal fungicidal surfaces
ARCANA® ACRYL	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - Didecyldimethylammonium chloride - Quaternary ammonium compounds, C12-14-alkyl[(ethylphenyl)methyl]dimethyl, chlorides	0.26 0.26 0.26	bactericidal fungicidal yeasticide virucidal - polyomavirus, rotavirus, murine norovirus, vaccinia virus, BVDV surfaces
ARCANA® ACRYL WIPES	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - Didecyldimethylammonium chloride - Quaternary ammonium compounds, C12-14-alkyl[(ethylphenyl)methyl]dimethyl, chlorides	0.26 0.26 0.26	bactericidal fungicidal surfaces (servețele)
ARCANA® ALCA COMBI	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - 2-Phenoxyethanol - Amines, n-C10-16-alkyltrimethylenedi-, reaction products with chloroacetic acid	22 17 0.90	Bactericidal fungicidal surfaces
ARCANA® RAPID	- Ethanol - Propan-1-ol	25 35	Bactericidal fungicidal surfaces
ARCANA® SAN	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - Didecyldimethylammonium chloride	9.20 0.80	bactericidal yeasticide surfaces
ARGOSEPT QUAT	-Glutaral - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	1 8	bactericidal yeasticide/ fungicidal surfaces
ASEPCLEAN	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	4.5	bactericidal surfaces
ASEPTO FL-D	Sodium hypochlorite	5.8	*

ASEPTOPOL EL 75	- N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine - Didecyldimethylammonium chloride - Ethanol	1.65 1 1.92	*
AseptoRobot Des	Sodium hypochlorite	6.2%	bactericidal yeasticide CIP
AseptoSupra	Sodium hypochlorite	8.3%	bactericidal yeasticide CIP
ASTRI - LC	Peracetic acid generated in situ from: Acetic acid and Hydrogen peroxide	4.2%	bactericidal yeasticide CIP
AXIS HYGIENET NF	Didecyldimethylammonium chloride	3.5	Bactericidal fungicidal surfaces
Bac Safe EL 400	- Alkyl (C12-16) dimethylbenzylammonium chloride [ADBAC/BKC (C12-C16)] - N-(3-Aminopropyl)-N'-dodecylpropane-1,3-diamine	0.94% 0.80%	bactericidal yeasticide surfaces
BacAcid EL 1000	-L-(+)-lactic acid - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	8 2.45	bactericidal yeasticide surfaces
BacForce EL 900	Sodium hypochlorite	3.94	bactericidal yeasticide/fungicidal surfaces
Bacillol 30 Foam	Etanol Propan-2-ol Propan-1-ol N-alkyl aminopropyl glycine	14% 10% 6.0% 0.5%	bactericidal yeasticide surfaces
Bacillol 30 Tissues	Etanol Propan-2-ol Propan-1-ol N-alkyl aminopropyl glycine	14% 10% 6.0% 0.5%	bactericidal yeasticide surfaces (şervețele)
BACILLOL AF	- Propan-2-ol - Propan-1-ol - Ethanol	25 45 4.7	Bactericidal fungicidal surfaces
BACILLOL TISSUES	- Propan-1-ol - Propan-2-ol - Ethanol	45 25 4.7	Bactericidal fungicidal surfaces (şervețele)
BacSpecial EL 500	N-(3-Aminopropyl)-N'-dodecylpropane-1,3-diamine	2.8	Bactericidal surfaces
BacSurf EL 300	N-(3-Aminopropyl)-N'-dodecylpropane-1,3-diamine	4	Bactericidal yeasticide surfaces
BEACTIVE 02 FOOD RTU	Didecyldimethylammonium chloride (DDAC)	0.30%	Bactericidal fungicidal surfaces

BEACTIVE 06 FOOD	Alkyl (C12-16) dimethylbenzylammonium chloride [ADBAC/BKC (C12-C16)] Didecyldimethylammonium chloride (DDAC)	5% 5%	Bactericidal fungicidal surfaces
BETA GUARD	Didecyldimethylammonium chloride	5	* surfaces
BICLOSOL	Sodium dichloroisocyanurate dihydrate	81.8	Bactericidal fungicidal yeasticide sporicidal virucidal surfaces
Bionet A 15	-Alkyl (C12-16) dimethylbenzyl ammonium chloride (ADBAC/BKC (C12-16)) -Didecyldimethylammonium chloride -Alcool etilic -Isopropyl alcohol -Monohydro chloride of polymer of N,N‴-1,6-hexanediylbis[N′-cyanoguanidine] (EINECS 240-032-4) and hexamethylenediamine (EINECS 204-679-6)/Polyhexa-methylene biguanide (monomer: 1,5-bis(trimethylen)-guanylguanidinium	6.25 2.5 6.35 3.65 0.3	Bactericidal fungicidal surfaces
BIOSEPT AKTIV	- Didecyldimethylammonium chloride - N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine - Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides	9 6 10	*
BIOSEPT TOTAL	- Didecyldimethylammonium chloride - Glutaral - Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides	10 15 15	*
Biosperse™ 3001 MICROBIOCIDE	Sodium hypochlorite	13%	Bactericidal fungicidal surfaces, CIP
BLUTOXOL	- Didecyldimethylammonium chloride - Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides	2.4 1.9	Bactericidal fungicidal surfaces
CALGONIT DS 680	Didecyldimethylammonium chloride (DDAC) Glutaral (Glutaraldehidă)	90g/kg 55g/kg	Bactericidal fungicidal surfaces

CATI - ETERA	Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides	1.7	bactericidal yeasticide fungicidal surfaces
CHEMIPUR CL 801	Sodium hypochlorite	15	Bactericidal fungicidal surfaces
CHEMISEPT QUAT	- Didecyldimethylammonium chloride - Propan-2-ol	20 5	bactericidal yeasticide surfaces
CHLORASEPT D	Sodium hypochlorite	5.8	Bactericidal yeasticide CIP
CHLORINEX 60	Sodium dichloroisocyanurate, dihydrate	56%	Bactericidal yeasticide fungicidal sporicidal surfaces
CHLORMATE	Sodium dichloroisocyanurate dihydrate	12	bactericidal surfaces
CIF PROFESSIONAL 2 IN 1 CLEANER DISINFECTANT	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	3.5 g/kg	Bactericidal yeasticide virucidal - influenza virus (A/H3N8) surfaces
CLEANISEPT	Didecylmethylammonium chloride Alkyl (C12-16) dimethylbenzylammonium chloride	3.33 % 6.66 %	*
CLINEX W3 BACTI	Acid glycolic	2.5%	Bactericidal fungicidal surfaces
CLORAMINA T – Sin 500 mg comprimate	Tosylchloramide sodium	500 mg / comprimat	Bactericidal fungicidal surfaces
CLOROM	Sodium dichloroisocyanurate dihydrate	77.14	Bactericidal fungicidal sporicidal virucidal surfaces
COSELIACTIVE CLOR	Sodium dichloroisocyanurate dihydrate	84	Bactericidal fungicidal surfaces
D 10 ALCALIN	Sodium hypochlorite	27	*
DECONEX 51 GASTRO	N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	7.5	bactericidal virucidal (inactivates) - HBV, HIV, H3N8, BVDV, H5N1, H1N1 and vaccinia virus tuberculocidal surfaces
DEEP PLUS	Sodium dichloroisocyanurate dihydrate	4.4	bactericidal surfaces

DELLADET	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	70	Bactericidal virucidal - avian influenza virus (A/H3N8) surfaces
DENCLOR FOAM	Sodium hypochlorite	5	Bactericidal fungicidal surfaces
DEOSAN DEOGEN	Sodium hypochlorite	6.75	Bactericidal fungicidal CIP
DEO-SEPT	- Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides - Didecyldimethylammonium chloride	5 5	Bactericidal fungicidal virucidal - vaccinia virus and BVDV surfaces
DEPTACID 2D	L-(+)-lactic acid	1.6	Bactericidal surfaces
DEPTAL CMP (ARGOLACT LCL)	Sodium hypochlorite	28.5% (4.33% cor activ)	bactericidal yeasticide surfaces
DEPTAL CSM SUPER	Sodium hypochlorite	10.52 (elibereaza 5.62% clor activ)	bactericidal surfaces
DEPTAL G (EMILIANA CL, MERAL CL, ARCOSOL TE)	Sodium hypochlorite	28.5% (4.3% cor activ)	Bactericidal yeasticide surfaces şi CIP
DEPTAL MCL	Sodium hypochlorite	10 (elibereaza 5.39% clor activ)	Bactericidal fungicidal surfaces
DEPTAL MDS	N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	2.4	bactericidal yeasticide surfaces
DEPTIL G4	- Glutaral - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	6.5 8.5	bactericidal yeasticide surfaces
Descosept AF	Etanol Didecyldimethylammonium chloride	42% 0.05%	*
Descosept AF Wipes	Etanol Didecyldimethylammonium chloride	42% 0.05%	bactericidal yeasticide surfaces
DESGUARD 20	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides -N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	7.5 4.0	*
DESIN	Didecyldimethylammonium chloride	2	*
DESINFEKTIONSREINIGER 0164	Sodium hypochlorite	35%	Bactericidal fungicidal surfaces

DESINFEKTIONSREINIGER 0510	Didecyldimethylammonium chloride (DDAC)	4.5%	Bactericidal fungicidal surfaces
DESOGEN (Davera f&b concentrat)	-Glutaral -Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	10 15	bactericidal fungicidal sporicidal micobactericidal virucidal surfaces
DESSAN 0153	Didecyldimethylammonium chloride (DDAC)	5%	bactericidal fungicidal surfaces
DETERGENT CU DEZINFECTANT BATOXEL	- Glyoxal - Didecyldimethylammonium chloride - Glutaral - Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides	3 2.3 2.5 3.8	bactericidal fungicidal surfaces
Detergent dezinfectant amfoteric AMPHOS SF	- Didecyldimethylammonium chloride -N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	0.53 2.62	bactericidal fungicidal surfaces
DETTOL® SPRAY DEZINFECTANT PENTRU surfaces GREEN APPLE	- Ethanol - Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, salts with 1,2-benzisothiazol-3(2H)-one 1,1-dioxide (1:1)	58 0.10	bactericidal fungicidal surfaces
DETTOL® SPRAY DEZINFECTANT PENTRU surfaces MOUNTAIN AIR	- Ethanol - Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, salts with 1,2-benzisothiazol-3(2H)-one 1,1-dioxide (1:1)	58 0.10	bactericidal fungicidal virucidal surfaces
DETTOL® SPRAY DEZINFECTANT PENTRU surfaces SPRING WATERFALL	- Ethanol - Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, salts with 1,2-benzisothiazol-3(2H)-one 1,1-dioxide (1:1)	58 0.10	bactericidal fungicidal virucidal surfaces
DEZINFECTANT DEGRESANT DENGRAS FOOD	Didecyldimethylammonium chloride	2.2	bactericidal fungicidal surfaces
Dezinfectant Degresant Fara Spuma LICLOR-29	Sodium hypochlorite	4.9	bactericidal fungicidal surfaces, circuits and equipment
Dezinfectant Hidroalcoolic DESCOL 75	-Ethanol - Didecyldimethylammonium chloride	69.6 0.14	bactericidal fungicidal surfaces and installations
DEZINFECTANT LiquidSense Sanitizer	N-(3-Aminopropyl)-N-dodecylpropan-1,3-diamin Alkyl (C12-16) dimethylbenzylammonium chloride [ADBAC/BKC (C12-C16)]	4.0% 7.5%	bactericidal yeasticide surfaces

DEZINFECTANT UNIVERSAL BIOXEL	Didecyldimethylammonium chloride	2.6	bactericidal fungicidal surfaces
DIEMER SEPT	Didecyldimethylammonium chloride	3.5	* surfaces
DISHGUARD 73	Didecyldimethylammonium chloride	15	* surfaces
DIVERFOAM ACTIVE	Peracetic acid Hydrogene peroxide	24g/kg (2.4%) 162g/kg (16.2%)	Bactericidal yeasticide fungicidal surfaces
DivoCIP	Sodium hypochlorite	49.25 g/kg	bactericidal fungicidal CIP
DIVOSAN HS 35	Hydrogen peroxide	350g/kg (35%)	bactericidal sporicidal surfaces
Divosan Omega HP VS 42	N-(3-Aminopropyl)-N'-dodecylpropane-1,3-diamine (Diamine) - Alkyl (C12-16) dimethylbenzylammonium chloride [ADBAC/BKC (C12-16)]	0.36% 0.25%	bactericidal yeasticide surfaces şi CIP
DIVOSAN BG VS 35	Glycolic acid	35g/kg	bactericidal yeasticide surfaces şi CIP
DIVOSAN EXTRA VT 55	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	150	Bactericidal fungicidal surfaces
DIVOSAN HYPOCHLORITE	Sodium hypochlorite	10	Bactericidal fungicidal surfaces
DIVOSAN MEZZO	Peracetic acid generated in situ from: -Hydrogen peroxide si -Acetic acid	190 g/kg 25 g/kg	bactericidal yeasticide fungicidal CIP
DIVOSAN OSA-N VS37	Glycollic acid	4.557	Bactericidal yeasticide (Saccharomices) fungicidal CIP
DIVOSAN TC 86	Sodium hypochlorite	4	* CIP
DIVOSAN TRACE	Peracetic acid generated in situ from: -Hydrogen peroxide and -Acetic acid	5% 4%	Bactericidal yeasticide fungicidal sporicidal virucidal, in the dairy industry for bacteriophages CIP
DIVOSAN UNIFORCE	Glycollic acid	10.5	bactericidal yeasticide surfaces

DM CID - S	Sodium hypochlorite	4.9	bactericidal yeasticide surfaces
DM CID ULTRA	N-(3-Aminopropyl)-N'-dodecylpropane-1,3-diamine (Diamine)	0.35% w/w	bactericidal yeasticide CIP
DOMINO	-Didecyldimethylammonium chloride -Etanol -Isopropyl alcohol	0.15 mg/g 460 mg/g 100 mg/g	Bactericidal fungicidal surfaces
DrySan Oxy	- Hydrogen peroxide	1.0%	Bactericidal fungicidal surfaces
DrySan Oxy Wipes	- Hydrogen peroxide	1.0%	Bactericidal fungicidal surfaces
E:DOSE SANITISER	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	6.99	bactericidal surfaces
E-ACID +2	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	50000 mg/kg	bactericidal yeasticide surfaces
ECO-BAC FOAM PLUS	Sodium hypochlorite	4.3	*surfaces
ENDUROPLUS VE 6	Sodium hypochlorite	0.06	Bactericidal yeasticide fungicidal surfaces
EST - EEM	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - Amines, n-C10-16-alkyltrimethylenedi-, reaction products with chloroacetic acid	1.5 0.297	bactericidal fungicidal surfaces
Fairy professional dezinfectant degresant	-Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides -Quaternary ammonium compounds, C12-14-alkyl[(ethylphenyl)methyl]dimethyl, chlorides	0.076 0.076	bactericidal surfaces
FETTENTFERNER 0404	Sodium hypochlorite	33%	bactericidal fungicidal CIP
FINK – VIROSEPT®	- Didecyldimethylammonium chloride - Glutaral - Quaternary ammonium compounds, benzyl-C12-14-alkyldimethyl, chlorides	7.8 10.75 17	bactericidal fungicidal surfaces

FIVE SUPER SANITIZZANTE	Peracetic acid generated in situ from: -Hydrogen peroxide si -Acetic acid	26 5	bactericidal fungicidal sporicidal dishwashers
FUMAGRI OPP	Biphenyl-2-ol	20	bactericidal fungicidal surfaces
GENEROX 225 A Precursor + GENEROX 225 B Precursor	GENEROX 225 A Precursor: Sodium chlorite GENEROX 225 B Precursor: Hydrogen chloride GENEROX 225 A Precursor + GENEROX 225 B Precursor: Chlorine dioxide (generat in situ) 5,8 mL GENEROX 225 A Precursor cu 5,8 mL GENEROX 225 B Precursor produce 1 gr. de ClO2	250 g/kg ≤ 310 g/kg 250 g/kg ≤ 400 g/kg 76 g/kg	Bactericidal fungicidal CIP, surfaces
GERMACERT PLUS (Alte denumiri comerciale: Everbrite Extra)	Didecyldimethylammonium chloride	4.5	Bactericidal fungicidal surfaces
Germicidan Rapid (Alte denumiri comerciale: Anti-Germ DES ALC)	- Ethanol - Propan-1-ol	25 35	Bactericidal fungicidal surfaces
GRAN ALKA DEZ	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - Glutaral	7 0.1	Bactericidal fungicidal surfaces
GRAN CLOR 2006	Sodium hypochlorite	3.84	*
GRAN DEZ 2008	Didecyldimethylammonium chloride	10	*
Gran Dish DES	Sodium hypochlorite	4.5 %	bactericidal yeasticide fungicidal CIP, dishwashers
GRAN QAT	- Ethanol - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	50 5	*
HALAMID R	Tosylchloramide sodium	100	bactericidal surfaces
HC-DPE	Hydrogen peroxide solution Peracetic acid solution (C> 10%) is formed in situ in the reaction between hydrogen peroxide and acetic acid Bis (peroxymonosulfate) -bis (sulfate) pentapotassium	250000 mg/kg 150000mg/kg 10000 mg/kg	bactericidal yeasticide CIP

HEXIO-CLOR	Sodium dichloroisocyanurate dihydrate	77.14	bactericidal fungicidal surfaces
HEXIO-SEPT AF	- Didecyldimethylammonium chloride - Poly(hexamethylenebiguanide)	15 3.5	*
HMI TABIDEZ 56	- Dicloroizocianurat de sodiu	2.77g / tb.(99%)	bactericidal fungicidal virucidal micobactericidal surfaces
HORECA SELECT DETERGENT LICHID DEZINFECTANT PENTRU BUCATARIE	- Alkyl (C12-16) dimethylbenzylammonium chloride [ADBAC/BKC (C12-C16)]	0.35%	bactericidal yeasticide surfaces
HOROLITHVIT	Peracetic acid generated in situ from: Acetic acid and Hydrogen peroxide	9.8%	bactericidal yeasticide equipment, CIP
HUWA - SAN AGRO	Hydrogen peroxide	35%	bactericidal fungicidal yeasticide surfaces
HUWA – SAN FOOD	Hydrogen peroxide	34.9%	bactericidal fungicidal yeasticide CIP şi surfaces
HUWA SAN TR 5	Hydrogen peroxide	4.9 %	Bactericidal fungicidal surfaces
HUWA SAN TR 50	Hydrogen peroxide	49.6%	bactericidal yeasticide fungicidal virucidal surfaces
HUWA-SAN KITCHEN	Hydrogen peroxide	3%	Bactericidal fungicidal surfaces
HYGEIA 120	- Didecyldimethylammonium chloride - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	2.25 2.25	Bactericidal surfaces
HYGEIA 500	- Polyhexamethylene biguanide - Didecyldimethylammonium chloride - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	2.5 4 5	Bactericidal surfaces
HYGEIA 530	- Glutaral - Didecyldimethylammonium chloride - Glyoxal	6 7.5 4	bactericidal surfaces

HYGIENE X detergent de vase cu dezinfectant (Alte denumiri comerciale: HYGIENIUM detergent de vase cu dezinfectant; Fine detergent de vase)	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	3	Bactericidal fungicidal surfaces
HYPOFOAM	Sodium hypochlorite	4.75	bactericidal surfaces
HYPROCLOR ED	Sodium hypochlorite	37	*CIP
IDZ	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	4.25	bactericidal surfaces
INSPEXX 210	Peracetic acid generated in situ from: -Hydrogen peroxide si -Acetic acid Peroxyoctanoic acid	12.2 1.4	bactericidal yeasticide surfaces
INTERHYGIENE AQUADES	- Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides - Propan-2-ol	10 20	*
INTEROX AG BATH 35	Hydrogen peroxide	35%	bactericidal fungicidal yeasticide virucidal sporicidal surfaces, equipment
INTEROX AG SPRAY 25S	Hydrogen peroxide	25%	bactericidal fungicidal yeasticide virucidal sporicidal surfaces, equipment
INTEROX AG SPRAY 35	Hydrogen peroxide	35%	bactericidal fungicidal yeasticide virucidal sporicidal surfaces, equipment
JACLOR	Sodium dichloroisocyanurate dihydrate	78	bactericidal yeasticide fungicidal virucidal - BVDV, vaccinia virus, MNV, HBV, HCV and HIV surfaces
JASOL COMPRMANTE DEZINFECTANTE	Sodium dichloroisocyanurate, dihydrate	720g/kg	Bactericidal fungicidal surfaces
KAY – 5 SANITIZER	Sodium dichloroisocyanurate dihydrate	6	* bactericidal ice cream machines

KAY SINK SANITIZER	Sodium dichloroisocyanurate dihydrate	23.85	*
KAY SOLIDSENSE SANITIZER	- Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides - Quaternary ammonium compounds, C12-14-alkyl[(ethylphenyl)methyl] dimethyl, chlorides	18.9 18.9	bactericidal surfaces
KAY SURFACE SANITIZER	Didecyldimethylammonium chloride	4.5	*
KAY-5 SANITIZER TABLETS	Dicloroizocianurat de sodiu	50% (1 tb/10L genereaza 100 ppm clor activ in solutia de lucru	bactericidal yeasticide surfaces
KEM – SEPT 70	- Ethanol - Propan-2-ol - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	30 20 5	Bactericidal fungicidal surfaces
KEM - SEPT KS 12	Peracetic acid generated in situ from: -Hydrogen peroxide si -Acetic acid	15	Bactericidal fungicidal surfaces
KEM - SEPT KS 16	Peracetic acid generated in situ from: -Hydrogen peroxide si -Acetic acid	7.5	Bactericidal fungicidal surfaces
KEM - SEPT KS 20	Sodium hypochlorite	4.5	bactericidal surfaces
KEM - SEPT KS 43	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	1.5	bactericidal surfaces
KEM – SEPT KS 47	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	7	Bactericidal fungicidal surfaces
KEM – SEPT KS 48	Didecyldimethylammonium chloride	10	*
KEM - SEPT KS 60	- Didecyldimethylammonium chloride - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	3.3 6.6	bactericidal virucidal - Murine Norvirus (MNV) surfaces
KEM - SEPT KS 75	- Glutaral - Didecyldimethylammonium chloride - Quaternary ammonium compounds, benzyl-C12-14-alkyldimethyl, chlorides	10.75 7.8 17	Bactericidal fungicidal surfaces

KEM-SEPT KS 26	Sodium hypochlorite	3.2	bactericidal surfaces
KEM-SEPT KS 33	Sodium hypochlorite	4.5 g/100 g	bactericidal fungicidal CIP
KEMTEK OXIDE 0,3%	Chlorine dioxide generated in situ Component B Sodium bisulfate Component A Sodium chlorite	0.3g% 99% 51.4%	bactericidal yeasticide surfaces
KENOSAN LACTIC	Lactic acid	3.6 g/100g	*
KitchenPro AziDES	-L-(+)-lactic acid - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	8.0 2.45	bactericidal yeasticide surfaces
KitchenPro DES	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides -N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	7.5 4	bactericidal fungicidal virucidal - Murine Norvirus, vaccinia virus şi BVDV surfaces
LELY FRIGUS-LIN	Sodium hypochlorite	6.2%	bactericidal yeasticide CIP
LERASEPT FP 408	- Propan-1-ol - Ethanol	35 29	Bactericidal fungicidal surfaces
Lerasept® Aktiv	Peracetic acid generated in situ from: Acetic acid and Apa oxigenata	4.9 g/100g	bactericidal fungicidal yeasticide sporicidal virucidal - the milk industry for bacteriophages (*Lactococcus lactis*) surfaces
Maxil Sept Ultrarapid	-Propan 2-ol -Etanol	0.25 0.5	bactericidal fungicidal sporicidal virucidal surfaces
MEDICLOR-TABLETE EFERVESCENTE CU CLOR ACTIV	Sodium dichloroisocyanurate dihydrate	77.14%	*
MERAL CL	Sodium hypochlorite	2.65	fungicidal surfaces
MERAX AC	Sodium hypochlorite	5	bactericidal fungicidal virucidal - for bacteriophages surfaces
MERAX Q	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	0.8	bactericidal fungicidal virucidal - for bacteriophages surfaces

MERAX SC	Sodium hypochlorite	13	bactericidal surfaces
MEROX ACTIV	Peracetic acid generated in situ from: -Hydrogen peroxide and -Acetic acid	5 23.0	bactericidal virucidal - for bacteriophages surfaces
MIKRO QUAT EXTRA	- Didecyldimethylammonium chloride - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	0.98 8	bactericidal yeasticide surfaces
NEOFORM K PLUS	- N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine - Didecyldimethylammonium chloride	2 10	bactericidal yeasticide virucidal - BVDV, vaccinia virus surfaces
Neoseptal PE 15	Peracetic acid generated in situ from: -Hydrogen peroxide si -Acetic acid	14.9g/100g 23g/100g	bactericidal fungicidal yeasticide CIP
NEOSEPTAL SPRAY	- Propan-1-ol - Ethanol	35 25	bactericidal fungicidal virucidal (inactivează)- vaccinia virusul and BVDV surfaces
NOCOLYSE FOOD	Hydrogen peroxide	7.9	bactericidal fungicidal sporicidal virucidal surfaces
NOWA QUICK-DES	- Propan-2-ol - N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	70 0.1	*surfaces
OASIS PRO 20 PREMIUM	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	7.5 4	*surfaces
OX-AQUA - generatia a 2-a	Hydrogen peroxide	48	bactericidal fungicidal surfaces
OXIVIR PLUS (Alte denumiri comerciale: Oxivir Plus J-Flex)	-Hydrogen peroxide - Salicylic acid	6.36 2.58	bactericidal fungicidal virucidal sporicidal surfaces
OXONET-OXODES (Alte denumiri comerciale: P3-OXONET - P3-OXODES)	Chlorine dioxide formed in situ from 7.5% sodium chlorite and dilute hydrochloric acid) 1000g mixture generates 17g of chlorine dioxide	1.7%	bactericidal yeasticide surfaces
OXTERIL 350 BATH	Hydrogen peroxide	35%	bactericidal fungicidal yeasticidea surfaces

OXTERIL 350 SPRAY	Hydrogen peroxide	35%	bactericidal fungicidal yeasticide surfaces
OX-VIRIN	Peracetic acid generated in situ from: -Hydrogen peroxide and -Acetic acid	25 5	bactericidal fungicidal virucidal - ECBO surfaces
OxyDes Maxi Wipes	- Hydrogen peroxide	2.0%	bactericidal yeasticide surfaces
OxyDes Rapid	- Hydrogen peroxide	2.0%	bactericidal yeasticide surfaces
OXYFLUSH MULTI	Peracetic acid generated in situ from: Acetic acid and Hydrogen peroxide	4.2%	bactericidal yeasticide equipment, CIP
P 3 - romit DES	Peracetic acid generated in situ from: -Hydrogen peroxide and -Acetic acid	16	bactericidal fungicidal sporicidal CIP
P3 – OXONIA ACTIVE	Peracetic acid generated in situ from: - Acetic acid - Hydrogen peroxide	4.9	bactericidal fungicidal sporicidal surfaces
P3 – OXONIA ACTIVE 150	Peracetic acid generated in situ from: - Acetic acid - Hydrogen peroxide	16	bactericidal fungicidal instalaţii, equipment şi încăperi
P3 – OXYPAK D	Hydrogen peroxide	35	Bactericidal Fungicidal Immersion
P3 – OXYPAK S	Hydrogen peroxide	35	* surfaces
P3 – OXYSAN CM	Peracetic acid generated in situ from: - Acetic acid - Hydrogen peroxide - Peroxyoctanoic acid	5.2 0.4	* equipment şi CIP
P3 - STERIL	- Didecyldimethylammonium chloride - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	2 2	*
P3 – TOPAX 66	Sodium hypochlorite	4.5	Bactericidal fungicidal surfaces
P3 – TOPAX 91	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	12.25	bactericidal yeasticide surfaces
P3 – TOPAX 960	N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	2.8	bactericidal yeasticide surfaces

P3 – TOPAX 99	N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	10	* surfaces
P3 – TOPAX 990	N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	4	bactericidal yeasticide surfaces
P3 STERIL	Clorură de alchil (C12-16) dimetilbenzi amoniu(clorura de benzalconiu) Didecyldimethylammonium chloride	1.75% 1.5%	bactericidal yeasticide surfaces
P3-ALCODES	- Ethanol - Glutaral	76.80 0.02	* surfaces
P3-HYPOCLORAN	Sodium hypochlorite	9.0%	bactericidal fungicidal yeasticide CIP, equipment
P3-OXONIA ACTIVE S	Peracetic acid generated in situ from: Acetic acid and Hydrogen peroxide	9.8 %	Bactericidal fungicidal CIP
P3-OXYSAN ZS	- Peracetic acid - Peroxyoctanoic acid	8 0.6	bactericidal fungicidal sporicidal yeasticide virucidal - bacteriophage milk industry (*Lactococcus lactis*) CIP, equipment
P3-TOPACTIVE DES	Peracetic acid generated in situ from: - Acetic acid - Hydrogen peroxide	1.1	bactericidal yeasticide surfaces
P3-TOPACTIVE OKTO	Peracetic acid generated in situ from: - Acetic acid - Hydrogen peroxide - Peroxyoctanoic acid	2.4 0.2	* surfaces, instalații
PANTASTIC DISINFECTANT	L-(+)-lactic acid	8	* surfaces Avizul se poate prelungi cu inca 2 ani, in urma dovezii
PERACLEAN 15	Peracetic acid generated in situ from: - Acetic acid - Hydrogen peroxide	15 21.6	Bactericidal fungicidal equipment, facilities and pipelines
PERFORM ADVANCED ALCOHOL EP	- Propan-1-ol - Ethanol	35 25	bactericidal fungicidal virucidal – vaccinia virus, BVDV surfaces

PERFORM ADVANCED CONCENTRATE QB	- Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides - Monohydro chloride of polymer of N,N'"-1,6-hexanediylbis[N′-cyanoguanidine] (EINECS 240-032-4) and hexamethylenediamine (EINECS 204-679-6) /Polyhexamethylene biguanide (monomer: 1,5-bis (trimethylen)-guanylguanidinium monohydrochloride)	30 3	bactericidal yeasticide virucidal - BVDV, HCV, virusul vaccinia surfaces
PERFORM CLASSIC ALCOHOL EP	- Propan-1-ol - Ethanol	35 25	*
PERFORM CLASSIC CONCENTRATE OXY	Pentapotassium bis(peroxymonosulphate) bis(sulphate)	45	*
PERFORM CLASSIC CONCENTRATE Q-PLUS	- Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides - 2-Phenoxyethanol - Amine, n-C10-16-alkyltrimethylenedi-(amino-alchil glycine)	22 17 0.9	*
PERFORM CLASSIC WIPES EP	- Propan-1-ol - Ethanol	35 25	bactericidal fungicidal virucidal - BVDV, HCV, vaccinia virus surfaces
PERFORM STERILE ALCOHOL EP	- Ethanol - Propan-1-ol	25 35	*
PERFORM STERILE CONCENTRATE OXY	Pentapotassium bis(peroxymonosulphate) bis(sulphate)	45	*
PERFORM STERILE CONCENTRATE QB	- Quaternary ammonium compounds, benzyl-C12-18-alkyldimethyl, chlorides - Monohydro chloride of polymer of N,N'"-1,6-hexanediylbis[N′-cyanoguanidine] (EINECS 240-032-4) and hexamethylenediamine (EINECS 204-679-6) /Polyhexamethylene biguanide (monomer: 1,5-bis (trimethylen)-guanylguanidinium monohydrochloride)	30 3	*

PERFORMANT D	-Alkyl (C12-16) dimethylbenzyl ammonium chloride (ADBAC/BKC (C12-16)) - Monohydro chloride of polymer of N,N‴-1,6-hexanediylbis[N′-cyanoguanidine] (EINECS 240-032-4) and hexamethylenediamine (EINECS 204-679-6)/Polyhexa-methylene biguanide (monomer: 1,5-bis(trimethylen)-guanylguanidinium mono-hydrochloride)	4 0.4	bactericidal fungicidal virucidal surfaces
PEROXAN FORTE	Peracetic acid generated in situ from: -Hydrogen peroxide and -Acetic acid	15	bactericidal fungicidal surfaces şi CIP
PROCID	- Glutaral - Didecyldimethylammonium chloride	10 3.75	* surfaces
PROCID FORTE	- Glutaral - Didecyldimethylammonium chloride	10 3.75	* surfaces
PURSEPT TABLETE	Sodium dichloroisocyanurate dihydrate	84 (1 tb. de cca. 3.2g elibereaza 1.5g clor activ)	bactericidal fungicidal micobactericidal surfaces, equipment
QUICK JAV	Sodium dichloroisocyanurate dihydrate	77	* surfaces
RAC 100	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - Quaternary ammonium compounds,di-C8-10-alkyldimethyl, chlorides	0.06 0.09	* surfaces
RAC 100 BL	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - Quaternary ammonium compounds,di-C8-10-alkyldimethyl, chlorides	0.06 0.09	* surfaces
RECA ALKALINE	Sodium hypochlorite	6.2%	bactericidal yeasticide CIP, milking equipment
RENTII FG	Didecyldimethylammonium chloride	4.5	Bactericidal fungicidal surfaces
ROMIT BF	Peracetic acid generated in situ from: Acetic acid and Hydrogen peroxide	4.9 %	bactericidal yeasticide CIP
San 20	Alkyl (C12-16) dimethylbenzylammonium chloride [ADBAC/BKC (C12-C16)] 50%	19.5%	bactericidal yeasticide surfaces

SANDIK	Etanol Propan-2-ol Compusi de amoniu cuaternar, benzyl-C12-16-alchildimetil, cloride 2-fenilfenol	14.95% 8.05% 0.25% 0.02%	bactericidal surfaces
SANICHLOR	Troclosene sodium	50	bactericidal fungicidal virucidal surfaces
SANITAS FORTE VET	- Glutaral - Didecyldimethylammonium chloride	14 10	*surfaces
SANOSIL Super 25 Ag	Hydrogen peroxide Silver	50% 0.05%	Bactericidal fungicidal surfaces şi CIP
SANOXSEPT	Peracetic acid generated in situ from: -Hydrogen peroxide and -Acetic acid	14% 12%	Bactericidal fungicidal surfaces şi CIP
SANSEPT 0200	Didecyldimethylammonium chloride (DDAC) Alkyl (C12-16) dimethylbenzylammonium chloride [ADBAC/BKC (C12-C16)]	10% 9%	Bactericidal fungicidal surfaces
SANYTOL DEZINFECTANT SOLUTIE DE CURATAT LAMAIE and FRUNZE DE MASLIN	Hydrogen peroxide	1.5 %	Bactericidal fungicidal virucidal - Influenza A (H1N1) Herpes simplex virus surfaces
SANYTOL SOLUTIE DE CURATAT DEZINFECTANT FRESH	Hydrogen peroxide	1.5%	Bactericidal fungicidal virucidal -Influenza A (H1N1), Herpes simplex virus surfaces
SANYTOL SOLUTIE DE CURATAT DEZINFECTANT BAI FRESH	Hydrogen peroxide	1.5%	Bactericidal fungicidal virucidal - Influenza A (H1N1), Herpes simplex virus surfaces
SANYTOL SOLUTIE DE CURATAT UNIVERSALA DEZINFECTANT FRESH	Hydrogen peroxide	1.5%	Bactericidal fungicidal virucidal - Influenza A (H1N1), Herpes simplex virus surfaces
SANYTOL SOLUTIE DE CURATAT UNIVERSALA DEZINFECTANT GREPFRUT FRESH	Hydrogen peroxide	1.5%	Bactericidal fungicidal virucidal - Influenza A (H1N1) Herpes simplex virus surfaces
SANYTOL SOLUTIE DE CURATAT DEZINFECTANT BUCATARIE FRESH	Hydrogen peroxide	1.5%	Bactericidal fungicidal virucidal - vaccinia poxvirus surfaces
SEPTOCLEAN CL 45	Sodium hypochlorite	40	*surfaces CIP
SEPTOCLEAN CL 50	Sodium hypochlorite	40	*surfaces

SEPTOQUAT	-Quaternary ammonium compounds, benzyl-C12-14-alkyldimethyl, chlorides - Didecyldimethylammonium chloride	20 30	Bactericidal fungicidal surfaces
SIRAFAN PERFECT	=C259- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - Monohydro chloride of polymer of N,N'''-1,6-hexanediylbis[N'-cyanoguanidine] (EINECS 240-032-4) and hexamethylenediamine (EINECS 204-679-6) /Polyhexamethylene biguanide (monomer: 1,5-bis (trimethylen)-guanylguanidinium monohydrochloride)	7.5 0.5	*surfaces
SIRAFAN SPRAY (SIRAFAN SPEED)	- Propan-2-ol - Propan-1-ol	35 25	bactericidal yeasticide virucidal - virusul vaccinia, BVDV, murine norovirus fungicidal surfaces
SOLA - BAC	Alkyl (C12-16) dimethylbenzylammonium chloride [ADBAC/BKC (C12-C16)]	25g/L	bactericidal surfaces
SOLID DES	Sodium dichloroisocyanurate dihydrate	3.6	Bactericidal yeasticide fungicidal dishwashers
SOLIKLOOR	Dicloroizocianurat de sodiu dihidrat	90 %	bactericidal yeasticide sporicidal surfaces
Solutie de curatat dezinfectanta RM 732	N –(3-aminopropil)-N-dodecilpropan- 1,3 Diamine	7.5	bactericidal yeasticide surfaces
Suma Alcohol Spray D 4.12	Etanol	77.1 %	bactericidal yeasticide virucidal surfaces
SUMA BAC CONC D10 (Alte denumiri comerciale: SUMA BAC CONC D10 CONC)	- Didecyldimethylammonium chloride - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	4.9 4.92	bactericidal surfaces
SUMA bac D10 (Alte denumiri comerciale: Cif Professional 2 in 1 cleaner disinfectant conc)	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	7%	bactericidal yeasticide virucidal - virusul vaccinia, tulpina Ankara surfaces
SUMA CHLORSAN	Sodium hypochlorite	6	bactericidal fungicidal surfaces

SUMA D10.1 CONC J-FLEX D10.1 conc (Alte denumiri comerciale: Suma San-conc D10.1 conc; McD RD conc)	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	20 1.8	bactericidal yeasticide surfaces
SUMA EQUIP SAN EASY PACK D 4.9	Sodium dichloroisocyanurate, dihydrate	60.7g/kg (6.07%)	*
SUMA QUICKSAN (Alte denumiri comerciale: Divodes FG)	-Propan-1-ol -Propan-2-ol	52.0 17.3	bactericidal yeasticide surfaces
Suma Sink San Easy Pack D 4.8	Dicloroizocianat de sodiu, dihidrat	200g/kg (20%)	bactericidal yeasticide ustensile
SUMA TAB D4 TAB	Sodium dichloroisocyanurate dihydrate	99.7% (997 g/kg) (1 tb.=1.5 g clor activ)	bactericidal yeasticide surfaces
SURE ™ Ice & Shake (Alte denumiri comerciale: SURE ™ Cleaner Disinfectant)	Lactic acid	29.9%	bactericidal yeasticide Ice machines
SUREDIS	N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	16.5	bactericidal fungicidal surfaces
SURFANIOS PREMIUM	N-(3-aminopropil)-N-dodecilpropan-1,3 diamina Clorura de didecildimetilamoniu	5.1% 2.5%	bactericidal yeasticide surfaces
SUTTER CUAT 88 FOOD	Clorură de alchil (C12-18) dimetilbenzil amoniu [ADBAC (C12-18)]	3.9%	bactericidal surfaces
TC ALCOSAN	- Propan-2-ol - Propan-1-ol	80 5	*
TEGO 2000	Amines, n-C10-16-alkyltrimethylenedi-, reaction products with chloroacetic acid	20	bactericidal surfaces
Tesol	Clor activ eliberat de Sodium hypochlorite	4.5g/100g	bactericidal surfaces
Tesol ME	Clor activ eliberat de Sodium hypochlorite	4.2 g/100 g	bactericidal surfaces
TH5	- Glutaral - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	10 32.75	bactericidal fungicidal sporicidal surfaces
TOLO 550	N-(3-aminopropyl)-N-dodecylpropane -1,3- diamine	7.5	bactericidal yeasticide surfaces
TOLO 880	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	12	bactericidal yeasticide surfaces

TRIMETA BBT	- L-(+)-lactic acid - Glycollic acid	4 2.1	bactericidal yeasticide installations, tanks, and equipment
TRIMETA CD	- L-(+)-lactic acid - Glycollic acid	2.4 2.1	bactericidal yeasticide surfaces
TRIMETA NOD	- Glycollic acid - L-(+)-lactic acid	2.1 2.4	*
Triquart AM	N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	3%	bactericidal yeasticide surfaces
Trump Des	Sodium hypochlorite	2.5 %	bactericidal fungicidal dishwashers
VIRAGRI PLUS	- Glutaral - Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - Didecyldimethylammonium chloride	15 8 1.5	Bactericidal yeasticide surfaces
VIROCID	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides - Didecyldimethylammonium chloride - Glutaral	17.06 7.8 10.73	bactericidal yeasticide surfaces
VULKAN	- Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides -Glutaral - Didecyldimethylammonium chloride	23.3 14.9 2.4	bactericidal surfaces
WEICOPER - FORTE	Peracetic acid generated in situ from: -Hydrogen peroxide and -Acetic acid	15 23	*
XZIOX	The Xziox product consists of Xziox Basic B + Xziox Activator A Xziox Basic B contains as active substance: - Sodium chlorite Xziox Activator A contains as active substance: - sodium hydrogensulphate By mixing it releases the active substance: - Chlorine dioxide	10-25g % >10g% 0.35g%	bactericidal fungicidal surfaces
Ydal Mec	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides (M=10)	0.2%	bactericidal fungicidal yeasticide surfaces

ZAL PERAX II	Peracetic acid generated in situ from: -Hydrogen peroxide and -Acetic acid	20 5	bactericidal fungicidal surfaces
**Divosan Sanibright VS 59	N- (3-aminopropyl) -N-dodecylpropane-1,3-diamine	2.10%	bactericidal yeasticide surfaces
**CHEMIPON KLOR	1,3dichlortriazine 2,4,6-trionadihydrate sodium-dichloroisocyanate sodium dihydrate	3.9 %	bactericidal yeasticide surfaces
**SANITEX	Benzyl-C12-16-alkyldimethyl, chlorides	5g/100g	bactericidal fungicidal surfaces
**OXIS-KA	Hydrogen peroxide formic acid	485g/Kg. 10g/Kg	bactericidal yeasticide surfaces

* Products that have an old approval and the efficacy / biocidal activity is not passed or that are not found in the platform of the Ministry of Health
** Biocidal products that are not found in the Register approved by the CNPB, but which were found on the platform of the Ministry of Health

Bibliographical sources:

- Dan M, 2020, Tabel Biocide (date nepublicate).
- • The approvals of the biocidal products were accessed from the platform of the Ministry of Health during the period 09-15.04.2020 http://old.ms.ro/sts_admin/
- http://www.ms.ro/2017/01/17/registrul-national-al-produselor-biocide/

Annex 8.
Laboratory procedures for the elimination of dangerous chemicals in the discipline Inspection and control of food of animal origin

DISPOSAL OF LABORATORY WASTE IN SANITARY SEWERAGE

Requirements for the disposal of chemicals in sewage

1. INTRODUCTION

Some chemicals or aqueous solutions that are not defined as hazardous waste and that are either simple inorganic salts or easily digestible organic materials by microorganisms in a water treatment plant can generally be disposed of in the runoff. limited and controlled.
Because any material poured into a drainage channel eventually flows into the wastewater treatment plant of FMV Bucharest (faculty within USAMV Bucharest) and finally into the Dâmbovița River, one of the largest tributaries of the river. Argeș, which flows into the Danube and later into the Black Sea. The water treatment plant adjacent to the Dâmbovița River is located in Glina commune, in the southeastern part of Bucharest, being designated in the General Urban Plan. Apa Nova company operates the Glina Wastewater Treatment Plant based on the Water Management Authorization issued by the National Administration "Romanian Waters" and treats 250,000,000 mc. Wastewater annually, the result of domestic, industrial and meteoric waters generated by the 2.2 million inhabitants of Bucharest and neighboring areas. Wastewater in its entirety is treated 100% by a mechanical process and
60% and through a biological process. Nova Water daily cleans the sewer system, which carries tons of waste of all kinds, including used masks and protective gloves. Through the technological treatment processes, more than 150,000 tons of waste are eliminated annually from the municipal wastewater, so that the waters returned to the natural emissary, respectively the Dâmbovița River, are conventionally clean. The non-existence of the Glina Wastewater Treatment Plant would have determined the total recovery of these quantities of waste in the water course "(https://www.profit.ro/povesti-cu-profit/energie/apa-nova- finalización-statiei -wastewater-treatment-glina-one-of-the-large-projects-greening-developed-the-level-of-europe-this-moment-achieve-integral-treatment-wastewater-discharge-19408600).
Beyond the legal requirements, our University also has ethical obligations to protect the environment.
Certain criteria must be met for materials to be safely poured into public sewers, including low toxicity, high water solubility and moderate pH. Only small amounts are allowed in the sewer system at any one time, and chemicals must be degradable by treating wastewater (a biological process). Large quantities, or highly concentrated stock solutions, of these materials should be packaged for collection and disposal through specialized services, with which the University should conclude a contract in this regard.
Only aqueous solutions of chemicals can reach the laboratory and the city drain; solid forms must use other means of disposal (normal waste or collection by specialized services). The FMV Bucharest waste management guide should be consulted for the disposal of solid, hazardous and other special waste which, due to its identity, nature or physical characteristics, cannot be disposed of in the municipal sanitation system.

Although these guidelines are specifically addressed to teaching and research laboratories, they also apply to other entities or departments that may generate liquid waste that needs to be disposed of.

2. RESPONSIBILITY

Within individual laboratories, the authorization of specific operations, the delimitation of appropriate safety procedures and instructions on such procedures are the responsibility of the principal investigator, faculty or the academic department.

It is the responsibility of every employee of FMV Bucharest laboratories to ensure that the chemical waste generated from their activities is disposed of properly. Some materials can be safely disposed of in a sanitary sewer, while unapproved disposal can cause damage to health, the environment or the operation of the sewerage collection system or sewage treatment plant.

Improper chemicals discharged into the drain can also be incorporated into sewage sludge, contaminating them sufficiently to limit their subsequent use where they could otherwise have been recycled.

After the treated wastewater leaves the unit, it flows to the Dâmbovița River, a major resource of recreational and picturesque water for this area. Managing this important natural resource is our collective responsibility.

Laboratory workers and all FMV Bucharest employees should consult this guide before allowing or undertaking the disposal of any laboratory chemicals. Compliance with these guidelines will be assessed during laboratory and facility inspections performed by the USAMV Bucharest Office for Occupational Safety and Emergency Situations (BSMSU), as recommended.

3. GENERAL SUBSTANCE DISPOSAL GUIDELINES

The materials discharged into a laboratory laboratory drainage channel enter the Bucharest sanitary sewer system, where it is mixed with sewage water and other wastewater from households and businesses in the area and discharged to the Glina wastewater treatment plant. There, in the waste treatment plant, the wastewater is subjected to bacterial degradation. Non-degradable chemicals, such as metals, are adsorbed in sludge or potentially discharged into surface waters. The guidelines for sewage disposal, described below, must be followed to prevent the occurrence of toxic concentrations of metals or organic compounds that reach surface waters, accumulate in sludge or disrupt the wastewater treatment process.

What can be removed?

In general, materials suitable for disposal in the duct in limited quantities must meet the following physical and chemical criteria:

They are liquid and slightly soluble in water (at least 3% soluble)

Easily biodegradable or can be easily treated by the wastewater treatment process

They are simple salt solutions with low inorganic substances

They are dilute organic substances with low aquatic toxicity and low concentration

They have a pH between 5.5 and 9.0

Chemicals that can be safely discharged into the drain include biological compounds and cellular constituents such as proteins, nucleic acids, carbohydrates, sugars, amino acids, nutrients, surfactants, and many metabolic intermediates. Other compounds include combinations of low toxicity soluble ion salts and dilute aqueous solutions (less than 10%) with low molecular weight biodegradable organic chemicals such as alcohols, aldehydes, ketones, amines, ethers, nitriles, esters, and nitroalkanes. Only those materials found in the following safety list will be discharged through the drain. Compounds that are not listed are not suitable for disposal through the sewer system unless specifically approved by USAMV, BSMSU.

Where can the removal take place?

Disposal through the drain must only be used when the drain leads to a sanitary sewer system * which eventually goes to the wastewater treatment plant. Rainwater drainage systems flow directly into surface water and should never be used to remove chemicals. Floor drains can flow to the rain gutter and should also never be used for disposal.

Laboratory sinks should be used for the disposal of chemicals on the safe list, as discussed below, and appropriate procedures should be followed for the discharge of waste into the drain.

How much can be spilled?

The amount of chemical waste for disposal through the sewer system should generally be limited to a few hundred grams or milliliters or less per day. Larger quantities should have the prior approval of BSMSU. Materials listed as safe for disposal by sewage in this document are approved for disposal in quantities of up to 100 grams or 100 milliliters per discharge.

Disposal should be followed by washing in the sink with excess water at least 100 times the amount. (This means that for 100 ml of discarded chemical, let the water run for about two minutes at maximum flow.)

Note: Sulfuric, hydrochloric, acetic and phosphoric acids may be discharged in larger quantities as they must be neutralized at a pH between 5.5 and 9.0 before they can be drained to the sewer.

Security issues?

Understand the hazards and toxicity of the materials you work with by consulting the safety data sheets (available at each departmental workplace, online or via BSMSU). First, check that the chemical or solution can be disposed of in accordance with these requirements and instructions. During the removal process, act slowly to avoid splashing and wear appropriate protective equipment (lab coat, goggles, mask, gloves). Consult the BSMSU Plan for proper chemical handling procedures. Chemicals that are not suitable for disposal must be collected as hazardous, special or solid waste. These procedures are set out in the BSMSU Waste Management Guide.

4. CHEMICALS THAT ARE NOT SAFE FOR DISPOSAL BY SEWERAGE

The following types of materials are prohibited from disposal through the drain:
Ash, slag, sand, mud, straw, chips, metal, glass, rags, feathers, tar, plastics, wood, manure, hair and meat, offal, paint residues, solids or viscous substances capable of obstructing the flow sewer.
Oil, grease, oil or other water-insoluble chemicals
Materials that are not biodegradable or would pass through the treatment plant in the Dâmbovița River and would be toxic to aquatic organisms or may accumulate in sediments.
Materials that could interfere with biological wastewater treatment processes or contaminate the disposal or reuse of sludge by normal methods is difficult or impossible.
All compounds that could lead to the presence of toxic gases or vapors in an amount that can cause acute health and safety problems for workers
Infectious substances
Hazardous waste - listed or characteristic hazardous waste
Some general types of chemicals that are not suitable for disposal in the gutter (unless otherwise permitted in this guide) include:
Halogenated hydrocarbons (exceeding the concentrations in the tables below);
Nitro compounds (organic compounds that contain one or more functional nitro groups (-NO2) and are often explosive;
mercaptans (thiols);
Flammable (immiscible in water) or at concentrations of concern;
Explosives such as azides and peroxides;
Water-soluble polymers that could form gels in the sewer system;

Splaiul Independenţei 105, District 5, 050097, BUCHAREST ROMANIA
Phone: + + 4021 318 0469; Fax:+ + 40 21 318 0498
www.FVMb.ro, e-mail: info@FVMb.ro

Water reactive materials;
Odorous chemicals;
Toxic chemicals, such as carcinogens, mutagens, teratogens;
NANOMATERIALS
Substances boiling below 50 ° C (122 ° F);
Solids or viscous substances in quantities which will cause obstruction of the flow in the sewage system;
Flammable and combustible solvents (flash points less than 140 ° F) (unless sufficiently diluted in water as part of the laboratory process so that the solution has a residual flash point greater than 140 ° F);
Discharges with a pH below 5.5 or higher than 9.0;
Mixtures that have a component that is not on the Safety List;
Any discharge that would cause the violation of the numerical or quality limits imposed by the Ordinances of general or industrial pre-treatment of wastewater imposed by the City of Bucharest;
Odorous compounds or volatile organic chemicals that can escape from the sewage system causing unpleasant odors (such as mercaptans or thiols);
Any waste that could give color that cannot be removed by the treatment process - that is, paint waste;

Metal ions and heavy metal salts in solutions or suspensions in concentrations exceeding the following:

Elements	**mg/L**
Arsenic	0,20
Barium	2.0
Boron	5.0
Cadmium	0,2
Chromium	2.0
Copper	2.0
Cyanide	1.0
Lead	2.0
Manganese	1.0
Mercury	0,01
Nickel	2.0
Selenium	0,02
Silver	2.5
Zinc	4.0

Organic compounds in solutions or suspensions in concentrations exceeding the following:
Elements mg/ L
Benzene 0.5 (EPA)
Carbon Tetrachloride 0.5 (EPA)
Monoclorbenzene 100 (EPA)
Chloroform 100 (EPA)
Cresol (or total o-, m- and p-cresol) 200 (EPA)
1,4-Dichlorobenzene 7.5 (EPA)
0.5-Dichloroethane 0.5 (EPA)
1,1-Dichlorethylene 0.7 (EPA)

2,4-Dinitrotoluene 0.13 (EPA) Hexachlorobenzene 0.013 (EPA) Hexachlorobutadiene 0.5 (EPA)
Hexachloroethane 3.0 (EPA)
Methyl Ethyl Ketone 200 (EPA) Nitrobenzene 2.0 (EPA) Pentachlorophenol 100 (EPA)
Pyridine 5.0 (EPA) Tetrachlorethylene 0.7 (EPA)
Toxaphene 0.5 (EPA) Trichlorethylene 0.5 (EPA)
2,4,5-trichlorophenol 400 (EPA)
2,4,6-trichlorophenol 2.0 (EPA)
Vinyl Chloride 0.2 (EPA)

Organic waste that would cause the discharge to exceed a total toxic organic matter (OTT) concentration of 2.13 mg / L.

Bio-waste exceeding the following:
Any spillage of animal or vegetable fats, oils or fats exceeding
200 mg / L.

Any material not on the safe list listed in section 5.0 below must be approved by the BSMSU office for disposal through the sewer system.
Check with the BSMSU office if you are unsure about the disposal of the sewer material. Laboratory neutralization instructions for some materials may also be available.

5.0 SAFE CHEMICALS FOR DISPOSAL THROUGH THE PUBLIC SEWERAGE NETWORK

When you dump your waste in the sewer, you must:

- Never dispose of anything that could lead to a surface storm sewer rather than a sanitary sewer.
- Use a sink that has no history of clogging or overflowing.
- Use a sink in the laboratory, preferably in a smoke hood.
- Wash with an excess of water at least 10-20 times after disposal in the sewer, to thoroughly rinse the sink and sink trap and to completely neutralize or inactivate the waste for disposal.
- Limit the amount discharged to 100 grams of dissolved substance per laboratory per day.
- Wear gloves, eye protection, a mask, and a lab coat.
- Deactivate biological materials (eg autoclave or bleach) before they are released into the sewer.

Inorganic substances

Diluted solutions of inorganic salts in which both the cation and the anion are listed below are suitable for disposal by sewage. The listed materials are considered to have a relatively low toxicity.
Compounds of any of these ions that are strongly acidic or basic must be neutralized before elimination into the channel.

UNIVERSITY OF AGRONOMICAL SCIENCES AND VETERINARY MEDICINE OF BUCHAREST
FACULTY OF VETERINARY MEDICINE
Splaiul Independenței 105, District 5, 050097, BUCHAREST ROMANIA
Phone: + + 4021 318 0469; Fax:+ + 40 21 318 0498
www.FVMb.ro, e-mail: info@FVMb.ro

Cationi	**Anioni**
Aluminiu (Al^{+3})	Borați de (BO_3^{-3})
Calciu (Ca^{+2})	Bromură (Br^-)
Fier (Fe^{+2}, Fe^{+3})	Bromat (BrO_3^-)
Hidrogen (H^+)	Carbonat (CO_3^{-2})
Potasiu (K^+)	Bicarbonat (HCO_3^-)
Litiu (Li^+)	Clorură (Cl^-)
Magneziu (Mg^{+2})	Clorat (ClO_3)
Sodiu (Na^+)	Bisulfit (HSO^{-3})
Amoniu ($NH4^+$)	Cianat (OCN^-)
Staniu (Sn^{+2})	Hidroxid (OH^-)
Stronțiu (Sr_2)	Iodură (I)
Titan (Ti^{+3}, Ti^{+4})	Iodat (IO_3^-)
Zirconiu (Zr^{+2})	Nitrat (NO_3^-)
	Nitrit (NO_2^-)
	Fosfat (PO_4)
	Sulfat (SO_4)
	Sulfit (SO_3)
	Tiocianat (SCN^-)

Mineral acids and bases should be neutralized within pH 5.5-9.0 before disposal - see recommended procedures.

Organic substances

The substances listed below, in amounts of up to about 100 g or 100 ml at a time, are suitable for disposal in the drain while washing with excess water. These substances are at least 3% soluble, have low toxicity hazards and are readily biodegradable..

Alcohol

Alcanols with 4 or less carbon atoms:

methanol
ETHANOL
propanol and isomers
butanol and
isomers

Alcanediols with 7 or less carbon atoms

ethylene glycol
propylene glycol
butyl glycol
butanediol + isomers
pentylene glycol
pentanediol + isomers
hexylene
hexanediol + isomers
heptamethylene glycol
heptandiol + isomers

Alkoxyalkanes with 6 or less carbon atoms:

methoxyethanol
ethoxyethanol
butoxyethanol
2-methoxyethanol
n-C4H9OCH2CH2OCH2CH2OH (2 (2-butoxyethoxy) ethanol)

Aldehydes

Aliphatic aldehydes with 4 or less carbon atoms:
formaldehyde (aqueous solution of 10% or less)
propanal (propionaldehyde)
butanal (butyraldehyde)
isobutyraldehyde

Amides

R-CO-NH2 and R-CO-NH-R with 4 or less carbon atoms and R-CO-N-R2 with 10 or less carbon atoms:
formamide
N-methyl formamide
N, N-diethyl formamide
N, N-dimethyl formamide
N-ethyl formamide
acetamide
N-methyl acetamide
N, N-dimethyl acetamide
N-ethyl acetamide
Propionamide
N-methyl propionamide
N, N-dimethyl propionamide
butiramide
isobutyramide

Amine

Aliphatic amines with 6 or fewer carbon atoms *:
methylamine
ethylamine
trimethylamine
N-ethyl methylamine
N-methyl propylamine
dimethyl propylamine
isopropylamine
1-ethyl propylamine
butylamine
methyl butylamine
N-ethyl butylamine
isobutylamine
amylamine
hexylamine
Aliphatic diamines with 6 or fewer carbon atoms:
1,2- or 1,3-propanediamine (1,2- or 1,3-diaminopropane)

* Unpleasant-smelling amines, such as dimethylamine and 1,4-butanediamine, should be neutralized and the resulting salt solutions should be discarded after mixing with at least 100 volumes of water to ensure complete neutralization. and inactivation. The elimination limit is 100 ml of active substance.

Carboxylic acids

Alkanoic acids with 5 or less carbon atoms: *
formic acid
acetic acid
propionic acid
butyric acid
isobutyric acid
valerian acid
isovaleric acid
Alcanedic acids with 5 or less carbon atoms:
oxalic acid (1,2-ethanediic acid)
malonic acid (1,3-propanedioic acid)
succinic acid (1,4-butanedioic acid)
glutaric acid (1,5-pentanedioic acid)
Hydroxyalkanoic acids with 5 or less carbon atoms:
lactic acid (2-hydroxypropanoic acid)
3-Hydroxybutyric acid
2-hydroxy isobutyric acid
Amino-alkanoic acids with 6 or less carbon and ammonium atoms, sodium and potassium salts of these acids.
Amino acids and the ammonium, sodium and potassium salts of these acids.
* Odorless organic acids, such as butyric and valerian acids, should also be neutralized and the resulting salt solutions to be discharged into the drain, mixed with at least 100 volumes of water to ensure complete neutralization and deactivation their. The elimination limit is 100 ml of active substance.

Eesters

Esters with 4 or less carbon atoms:
methyl formate
ethyl formate
formed by isopropyl
formed of propyl

methyl acetate
ethyl acetate
methyl propionate
Isopropyl acetate

Ketones

Ketones with 4 or less carbon atoms:
acetone
methyl ethyl ketone (butanone)
methyl isopropyl ketone (3-methyl butanone)
Sulfonic acids and the ammonium, sodium and potassium salts of these acids:
methane sulfonic acid, sodium or potassium salt

ethane sulfonic acid, sodium or potassium salt
1-propane sulfonic acid, sodium or potassium salt
1-butane sulfonic acid, sodium or potassium salt
1-pentane sulfonic acid, sodium or potassium salt
1-hexane sulfonic acid, sodium or potassium salt
1-heptane sulfonic acid, sodium or potassium salt
1-octane sulfonic acid, sodium or potassium salt
1-decan sulfonic acid, sodium or potassium salt
1-dodecane sulfonic acid, sodium or potassium salt
1-tetradecane sulfonic acid, sodium or potassium salt
1-hexadecane sulfonic acid, sodium or potassium salt

Note: Before discharging any of these substances into the sewer, make sure that all other generic disposal criteria such as pH limits and flammability are met.

6.0 RADIOACTIVE MATERIALS

Radioactive materials cannot be disposed of.

NEUTRALIZATION OF ACIDS AND BASES USED

The mineral acids used, the saturated fatty acids and the bases (hydroxides) comprise a large part of the unwanted chemicals generated or stored in the laboratories on campus or in the maintenance activities of the utilities. As part of regular laboratory procedures, on-campus laboratories must neutralize spent inorganic acids, acetic acid, saturated fatty acids, and bases (hydroxides) that do not contain metal or organic contaminants. These chemicals will be managed in an "elementary neutralization unit" and are therefore not considered a part of the hazardous waste stream for campus. An "elementary neutralization unit" is a container used to neutralize corrosive waste.

Neutralization is a relatively simple procedure that is best performed by and in the laboratory, which regularly uses inorganic acids, acetic acid, saturated fatty acids and bases (hydroxides). The laboratory that generates used corrosives usually has the facilities and expertise to neutralize them and will therefore be responsible for this. The following procedures (see A - D) describe the appropriate technique for neutralizing spent inorganic acids, acetic acid, saturated fatty acids and bases (hydroxides) as part of common laboratory procedures. At the end of this appendix are the lists of corrosives that need to be managed indoors by the labs on campus. Aqueous corrosive waste must NOT contain sulfides, cyanides, metals or other materials that may emit hazardous vapors when reacted with the acid or base.

DO NOT use these procedures to:
- INORGANIC ACIDS CONTAINING HEAVY METALS (eg atomic absorption standards, arsenic, cadmium, chromium, lead, mercury, nickel, selenium, silver, thallium. Solutions containing sodium, potassium, magnesium, iron can be neutralized as long as the anion is also harmless.)

- ESTERS OF INORGANIC ACIDS
- CHROMIC ACID
- PERCHLORIC ACID
- HYDROFLORIC ACID
- ORGANIC ACIDS (EXCEPT ACETIC ACID AND SATURATED FATTY ACIDS)
- LARGE QUANTITIES OF NITRIC ACID

A. Equipment needed to neutralize acids and bases

1. Carbonat de sodiu, bicarbonat de sodiu sau bază anorganică diluată (hidroxid) pentru neutralizarea unui acid sau un acid anorganic diluat pentru neutralizarea unei baze.
2. Găleată din polietilenă - dimensiune de 5 sau 10 L, după preferințele personale.
3. Echipament de protecție (ochelari, șorț, mănuși, mască).
4. Pahare de 500 ml.
5. Benzi indicatoare de pH sau altă metodă de testare a pH-ului.

B. Personal protective equipment

Read the Safety Data Sheet for Substance Properties for detailed information. Call the BSMSU office if the plug-in is not available. The MINIMUM recommended personal protection required for the neutralization procedure is:
Ventilation: Work under a hood
Gloves: Use neoprene, natural rubber, isobutene-isoprene rubber, polyethylene, nitrile butadiene or polyvinyl chloride, depending on the information in the data sheet. Protective clothing: apron (rubber is preferred), lab coat (or protective suit or overalls) and closed-toed shoes.
Eye protection: Spray or dust goggles AND protective mask.
Your hands should always be washed after working with chemicals. There is an eye wash station and a sink in the area. All employees need to know how to locate these emergency facilities before starting work.
ATTENTION, PLEASE NOTE: EXTREME HEAT MAY BE PRODUCED DURING THIS NEUTRALIZATION PROCEDURE EXCEPT WHEN IT IS MADE VERY SLOWLY AND THE SUBSTANCE IS WELL DILUTED. CAREFULLY MONITOR THE HEAT INTENSITY PRODUCED BY USING A THERMOMETER OR TOUCHING THE OUTSIDE OF THE NEUTRALIZATION CONTAINER. USE ICE BATH, IF NECESSARY.

C. Acid neutralization procedure

1. Make a saturated solution of sodium carbonate in a glass or use an inorganic base diluted with water (ratio 1:10) - set aside.
2. Put tap water in a 5 or 10 L polyethylene bucket.
3. Dilute the acid at least 1:10 (1 part acid to 9 parts water) by pouring slowly and mixing the acid into the water

4. Slowly add sodium carbonate or other basic solution to the dilute acid with stirring or keep the acid diluted to neutralize the bases as described below.
5. Monitor the pH with a pH meter, pH indicator strips or other method of pH testing.

6. When the pH is between 6 and 9, discard the mixture in a drain followed by the addition of excess water. A pH close to 7 is preferred to reduce the possibility of damage to the plant.

A USEFUL TIP: When you neutralize an acid, the pH can be tested quickly by the following method. Make a saturated solution of baking soda in water. A small amount of sodium bicarbonate solution poured into the acid will make a "noisy" noise, which is a release of carbon dioxide. As carbon dioxide is formed as a result of these procedures, make sure that adequate ventilation is available. This hiss will indicate that the solution is still acidic and needs more base to be added. Always shake the mixture and perform a final pH check before pouring the neutralized acid into the channel.

D. Neutralization of bases

1. Put tap water in a 5 or 10 L polyethylene bucket.
2. Dilute the alkaline waste at least 1:10 (1 part alkaline to 9 parts water) by slowly pouring and shaking the base in water.
3. Neutralize the dilute alkaline solution with a previously diluted inorganic acid.
4. Monitor the pH with a pH meter, pH indicator strips or other method of pH testing.
5. When the pH is between 6 and 9, discard the reagent mixture in a drain followed by excess water. A pH close to 7 is preferred to reduce the possibility of damage to the plant.

NOTE: For concentrated acids and bases, neutralization should be done slowly and with strong agitation. If you have any questions or would like to try this procedure with any used acidic or alkaline waste, please contact your principal investigator, laboratory manager or department head. The recommended time for the neutralization procedure is when the wastewater flow is at a peak level, e.g., 9:00 a.m.