UNIVERSITÄT LEIPZIG

VMF Veterinärmedizinische Fakultät

BIOSECURITY HANDBOOK
Faculty of Veterinary Medicine
Leipzig University

Responsible Administration: Faculty of Veterinary Medicine (VMF), Leipzig University
Responsible Services: All services of the VMF
Prepared by: Biosecurity Committee
Intended for:
- The Dean of the VMF
- All Heads of VMF
- All Chairmen of VMF Departments and Clinics
- All technical services
- All employees of the VMF
- All students of the VMF

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Definitions:

Aerosol: Liquid or solid particles suspended in air and of a size that may allow inhalation into the lower respiratory tract.

Aerosol/airborne transmission: The spread of infection caused by the inhalation of aerosols.

Aerosol-generating procedure: Any procedure that intentionally or inadvertently results in the creation of liquid or solid particles, which become suspended in the air (aerosols).

Antimicrobial Agent: Any substance – of natural, semi-synthetic or synthetic origin – that kills or inhibits the growth of a microorganism. Examples: streptomycin, penicillin, gentamicin.

Antibiotic: A substance produced by a microorganism that kills or inhibits the growth of another microorganism. All antibiotics are antimicrobial agents. Examples: penicillin, lincomycin.

Aseptic techniques: Conditions and procedural measures designed to effectively prevent contamination.

Biological agent/material: A microorganism, virus, biological toxin, particle or otherwise infectious material, either naturally occurring or genetically modified, which may have the potential to cause infection, allergy, toxicity or otherwise create a hazard to humans, animals, or plants.

Biosafety: Is the use of specific practices, safety equipment, and specially designed facilities to ensure that workers, the community, and the environment are protected from inadvertent incidents with infectious agents, toxins, and biological hazards.

Biosafety level (BSL): Biosafety levels are individual safeguards designed to protect laboratory personnel, as well as the surrounding environment and community. They indicate what specific controls a laboratory must have in place for the containment of microbes and biological agents.

Biosecurity: Refers to the protection of stables, clinics and biological agents handled in research and teaching laboratories of this faculty from loss, theft, diversion, or intentional misuse.

Contagious disease: Subset category of transmissible diseases, which are transmitted to others, either by physical contact with the person suffering the disease, or by casual contact with their secretions or objects touched by them or airborne route among other routes.

Containment: The combination of infrastructure and operational practices that protect personnel, the immediate work environment and the community from exposure to biological agents. The term "biocontainment" is also used in this context.

Decontamination: Reduction of viable biological agents or other hazardous materials on a surface or object(s) to a pre-defined level by chemical and/or physical means in order to make an infection less likely.

Disinfectants: Agents capable of eliminating viable biological agents on surfaces or in liquid waste.

Disinfection: A process to eliminate viable biological agents from items or surfaces for further safe handling or use. Antimicrobial agents that are applied to the surface of non-living objects to destroy microorganisms that are living on the objects.

Good microbiological practice (GMP): A basic laboratory code of practice applicable to all types of laboratory activities with biological agents, including general behaviours and aseptic techniques that should always be observed in the research and teaching laboratory. This code serves to protect laboratory personnel, students and the community from infection, prevent contamination of the environment, and provide protection for the work materials in use.

Hazard: An object or situation that has the potential to cause adverse effects when an organism, system or (sub)population is exposed to it. In the case of laboratory biosafety, the hazard is defined as biological agents which have the potential to cause adverse effects to personnel and/or humans, animals, and the wider community and environment. A hazard does not become a “risk” until the likelihood and consequences of that hazard causing harm are considered.

Infectious dose: The amount of biological agent required to cause an infection in the host, measured in number of organisms. Often defined as the ID50, the dose that will cause infection in 50% of those exposed.

Infectious disease: caused by living organisms that cause harm while residing in or on an animal's body, where these living agents replicate and are involved in a trophic relationship with the animal.
Nosocomial infection: hospital-acquired infection.
One Health (as defined by Definition by One Health High Level Expert Panel): One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent. The approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development.
Pathogen: A biological agent capable of causing disease in humans, animals or plants.
Personal protective equipment (PPE): Equipment and/or clothing worn by personnel to provide a barrier against biological agents, thereby minimizing the likelihood of exposure. PPE includes, but is not limited to, laboratory coats, gowns, full-body suits, gloves, protective footwear, safety glasses, safety goggles, masks and respirators.
Redundancy: Repetitions of systems or parts of a system to provide protection in the case of a primary system failure. For example, a series of high efficiency particulate air (HEPA) filters in case one or more fail when used to move laboratory air to the outside environment.
Risk: A combination of the likelihood of an incident and the severity of the harm (consequences) if that incident were to occur.
Risk group: To enable employers to take practical protective measures, biological substances are classified into four risk groups according to their risk of infection for humans. This is based on transmissibility, severity of the disease and curability. Biological agents in risk group 1 have the lowest risk of infection and those in risk group 4 the highest.
Risk assessment: A systematic process of gathering information and evaluating the likelihood and consequences of exposure to or release of workplace hazard(s) and determining the appropriate risk control measures to reduce the risk to an acceptable risk.
Risk communication: An interactive and systematic process to exchange information and opinion on risk(s) that inclusively engages all relevant personnel of various categories as well as community leaders and officials where appropriate. Risk communication is an integral and ongoing part of the risk assessment, soliciting clear understanding of the risk assessment process and outcomes, aiming at proper implementation of risk control measures. Decisions on risk communication, including what, whom and how, should be part of an overall risk communication strategy.
Standard operating procedure (SOP): A set of well-documented and validated stepwise instructions outlining how to perform laboratory practices and procedures in a safe, timely and reliable manner, in line with institutional policies, best practice and applicable national or international regulations.
Sterilization: A process that kills and/or removes all biological agents including spores.
Validation: Systematic and documented confirmation that the specified requirements are adequate to ensure the intended outcome or results. For example, in order to prove a material is decontaminated, laboratory personnel must validate the robustness of the decontamination method by measurement of the remaining biological agents against the detection limit by chemical, physical or biological indicators.
Zoonotic disease (zoonosis): Infectious disease that is naturally transmitted from animals to humans and vice versa.

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1 Chapter General Biorisk Management

1.1 General statement

The Faculty of Veterinary Medicine of Leipzig University (VMF) is dedicated to providing a robust and coordinated frame work in terms of animal, client and employee and student health. These health needs are best defined in a Biorisk Management, which addresses the areas of biosafety and biosecurity. These aspects are briefly outlined and are in accordance with the definitions of the American Biological Safety Association (ABSA International) and U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS):

1. **Biosafety (biological safety)** is the use of specific practices, safety equipment, and specially designed facilities to ensure that workers, the community, and the environment are protected from inadvertent incidents with infectious agents, toxins, and biological hazards.
2. **Biosecurity** refers to the protection of stables, clinics and biological agents handled in research and teaching laboratories of this faculty from loss, theft, diversion, or intentional misuse.

1.2 Scope

This handbook serves to minimize the risk of introduction, spread and discharge of animal diseases and infectious agents into or out of the facilities of the VMF and to maintain the operation of the VMF even in times of concrete animal disease risks. These regulations also regulate basic measures to protect employees, visitors and students from infection. The procedures set out measures for cleaning, disinfection, sterilization and the disposal of infectious material for work areas in which employees, trainees, students or patient owners are at risk from infectious agents. In this respect, the handbook represents a compilation of the specific procedures of each institute- and clinic (for details see chapters 2-10) and summarizes general measures to combat disease outbreaks. The biosecurity procedures are the instructions of the managing directors for the VMF area. The directors have to ensure the implementation of the hygiene regulations in their respective areas of responsibility.

1.3 The VMF Biosecurity Committee

Is an expert panel of people who possess specialist knowledge in biosafety and biosecurity, are appointed as (bio-)safety officers by the Office of Environmental and Occupational Health of Leipzig University and who work within research areas that deal with biological agents and genetically modified agents. The current members are:

- Dr. med. vet. Jan Schinköthe, Institute of Pathology
- Birte Scholz, Institute of Animal Nutrition, Nutrition Diseases and Dietetics and Institute of Pharmacology, Pharmacy and Toxicology
- Prof. Dr. med. vet. Uwe Truyen (Chairman), Institute of Animal Hygiene and Veterinary Public Health

Standing Invitees: Dean’s office

1.4 Biosafety and biosecurity relevant infrastructure at the campus

The VMF campus is located near downtown Leipzig and harbors clinical departments for companion and livestock animals in close proximity to each other. In addition, research and teaching laboratories that handle biological agents up to risk group 2 (see TRBA460-466 for classification) are located on campus. Since this is directed work focused on a specific biological agent with known concentrations, these environments are designated up to biosafety level 2 according to BiostoffV and, if applicable, GenTSV and are outlined in red in the legend of figure 1.

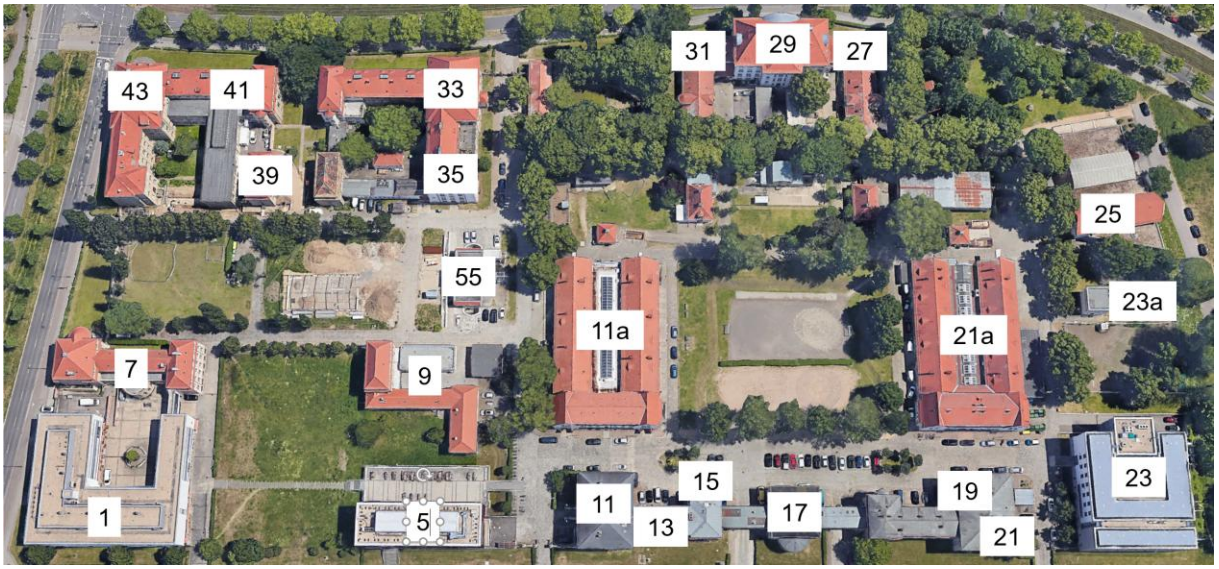


Figure 1. Faculty of Veterinary Medicine. 1. Institute of Physiological Chemistry, Institute of Animal Hygiene and Veterinary Public Health, Institute of Food Hygiene. 5. Herbert-Gürtler-Haus: Lecture rooms, Library and cafeteria. 7. Institute of Physiology. 9. Institute of Animal Nutrition, Nutrition Diseases and Dietetics; Institute of Bacteriology and Mycology. 11, 11a. Department for Ruminants and Swine, Department for Horses (Internal Medicine/Reproductive Medicine section). 13, 15. Institute of Pharmacology, Pharmacy and Toxicology. 15. Farriery. 17. Department for Birds and Reptiles. 19. Dean's office. 21, 21a. Department for Horses (Surgical and Orthopedic section). 23. Department for Small Animals. 23a. Institute of Physiological Chemistry: animal facilities. 25. Maintenance and Waste Management. 29. Institute of Virology, Institute of Bacteriology and Mycology. 29, 31. Department for Ruminants and Swine. 33 Institute of Pathology. 35 Institute of Parasitology. 39 Financial administration and VETIDATA. 41, 43. Institute of Veterinary Anatomy, Institute of Animal Hygiene and Veterinary Public Health. 55. Old Boiler House (The Institute of Immunology is not depicted, since it is located at the Centre for Biotechnology and Biomedicine, Deutscher Platz 5).

The clinical departments work in an undirected setting regarding biological agents, since clinical cases are characterized bona fide by the fact that one does not necessarily know in advance whether it is an infectious disease with fever or a febrile underlying disease of another cause. For this reason, the rules of TRBA 260 apply here and are the basis for operational procedures in the companion and livestock animal clinics.

1.5 Entrance to facilities

Entering and using lecture halls, canteen, public faculty grounds

Most lecture halls and meeting rooms may only be entered by staff, trainees and students in private clothing.

- The cafeteria may only be entered in private clothing.
- The faculty premises are not to be left in work clothing and PPE.
- Dogs are not permitted in lecture halls. Dogs should not be tied up on the faculty premises as far as possible. If dogs are brought along, the owner must ensure that the excrement is disposed of properly. Dogs are generally prohibited from being tied up in the area of the cafeteria entrance and the institute and clinic entrances.

Entering and use of course rooms

The use of course rooms for training purposes by several institutions requires special measures to protect against infection. Entry is only permitted with the prescribed work clothing and PPE. All documents and private clothing that are not absolutely necessary for the course in question must remain in the changing room during the course. The specific management and

hygiene measures depend on the course objectives and are within the responsibility of each institution performing a course (for detailed procedures see Chapter 2-10 and the Annex with hygiene plans of clinics and institutes)

Entering clinical departments and institutes – Instruction according to occupational and biological agent law (ArbSchG, BioStoffV)

All employees, doctoral students and students in training at the VMF must be instructed by the designated personnel concerning the hygiene risks and the content of institute-specific SOP before entering the clinic areas and laboratory areas of each clinic/institute. An appropriate at least annual theoretical and, if necessary, practical training in biosafety and biosecurity as well as GMP is mandatory, and has to be ensured by each clinic and institute. This training has to be documented and the signed declaration is stored in each institution. Training content comprises hygiene rules regarding clothing, footwear and hand disinfection before and after visiting other animal facilities to name a few. Visitors, guests, students as well as employees of the technical services and janitors and employees of external companies must also be instructed accordingly and specifically for the areas concerned.

All institutions must establish the necessary measures to protect students from infection during courses for which they are responsible, e.g., practical courses, laboratory courses, clinical demonstrations and exercises, and enforce their implementation through documented instruction, controls and, if necessary, restriction measures.

Entering animal husbandry facilities

Personnel involved in necropsy and laboratory tests for the detection of infectious animal disease pathogens may only access animal facilities belonging to VMF or other VMF facilities, as well as other facilities and farms with susceptible animal species if they comply with strict personnel and general hygiene measures (complete change of clothing and disinfection of hands at least twice) and with appropriate documentation.

Access to clinical departments/institutes by visitors with previous (within the last 3 days) contact with animals of the relevant species must be restricted to the absolute minimum necessary, particularly in the case of livestock animals. Visitors must be informed accordingly and it is mandatory to thoroughly disinfect hands and footwear and wear a protective gown before entering the infection areas/stables in animal husbandry areas. Specific guidelines are outlined in the respective chapters.

1.6 Animals at the faculty

All VMF facilities may only keep as many animals as can be kept in the event of a disease outbreak of a notifiable animal disease according to European animal health law. The criteria are outlined in the animal disease crisis plan (see Annex 2). All VMF facilities with animal husbandry must have the necessary basic equipment for the humane killing of the species concerned.

The access of dogs, cats and other animals to institutes with microbiological research and service laboratories of biosafety levels (BSL) 1 and 2 (in accordance with the Biological Substances Ordinance or the Genetic Engineering Act) and/or with necropsy areas is strictly prohibited. In VMF clinical departments, dogs and cats must be strictly prohibited from entering all laboratory and animal husbandry areas.

1.7 General hygiene measures

1.7.1 Work clothing and personal protective equipment

Specific clothing is required in areas where the clothing of employees and students may be contaminated with feces, blood and pathogens. Here, we differentiate between work clothing

and PPE. In contrast to PPE, work clothing is not claimed to have any special protective effect. Essentially, this clothing is worn to keep dirt and the like away from private clothing. Work clothing can be colored shirts, trousers or overalls worn in the clinical departments or the necropsy room. PPE are garments that have been tested according to DIN EN regulations in a suitable test laboratory with regard to various properties. PPE can be lab coats, gowns, aprons worn over work clothing, rubber boots and safety goggles.

The work clothing of those at risk must be changed as required, but at least once a week, and that of students as required, but at least at the end of the semester. Work clothing and PPE are specific to each institute/clinic and may only be worn in that institute/clinic. Work clothing of employees and trainees must always be regarded as contaminated.

When working in areas with a particular risk of infection in a clinical setting (e.g., isolation areas) or if work is carried out on a biological substance in a laboratory of protection and safety level 2, additional area-specific PPE must be worn and PPE needs to be present (e.g., face-filtering devices like N95 respirators and face shields). In areas where the work clothing is very likely to be contaminated, e.g., necropsy rooms, cadaver storage rooms, additional PPE is required, e.g., rubber boots or disposable overshoes, rubber or plastic apron, mask, gloves and head protection. This PPE must be disposed of or, if reusable, must be disinfected at least daily or preferably immediately after use.

The wearing of jewelry such as watches, chains or rings is not permitted in areas with a particular risk of infection.

1.7.2 Basic principles:

- Protective gloves must be worn
    a. to protect against contamination with potentially infectious substances in blood, pus, exudate, sputum, feces, urine, etc.
    b. when examining, treating and caring for animals suspected of being infected with zoonotic agents (sufficiently resistant gloves to protect against the risk of injury) and
    c. when working with skin-damaging substances such as disinfectant concentrates.
- Work clothing and reusable PPE must be stored separately from private clothing.
- Before entering work rooms, most lecture theatres, break rooms/cafeteria or when leaving areas at risk of infection, employees and trainees must remove the PPE they are wearing. It is not permitted for employees and trainees to wear the same PPE in different areas where there is a risk of infection.

1.8 Hand hygiene and disinfection

Only preparations tested and listed by the Association for Applied Hygiene (VAH) may be used for hygienic hand disinfection. Hygienic hand disinfection must always be carried out

1. before patient contact,
2. after patient contact,
3. after contact with surfaces in the immediate vicinity of the patient,
4. after contact with potentially infectious material e.g., blood, secretions, excretions or similar, as well as virus-infected cell cultures, bacterial cultures,
5. in the case of visible contamination with, e.g., blood, pus, exudate, sputum, stool, feces, urine,
6. when leaving areas (e.g., infection and isolation departments, laboratories) where hands may have been contaminated with pathogens,
7. after removing the protective gloves.

Hands are washed after disinfection. For this purpose, a wash lotion from wall-mounted soap dispensers is used, not bar soap. The extensive hand hygiene described above in the case of visible contamination with blood or excretions emphasizes the sensible requirement to wear disposable protective gloves for all activities where contamination of the hands with blood, secretions, excretions or similar cannot be ruled out.

1.9 General rules for cleaning and disinfection

Work areas with a risk of infection (laboratories, stables, treatment rooms, etc.) for employees and trainees must have liquid-proof, disinfectable and easy-to-clean floors and walls. Furnishings, built-in equipment and fittings in these areas must have surfaces that can be cleaned and disinfected with liquids chemicals.

Entrances and exits to areas with an increased risk of infection (e.g., laboratories of safety level 2, infection stables) must be marked and unauthorized persons must be strictly prohibited from entering. The entrance restriction must be clearly, legibly and permanently signposted. Signs with a smooth, disinfectable surface are particularly suitable. The following two signs are required:

At the entrances and exits of rooms with an increased risk of infection, facilities for disinfecting shoes must be available. The entrances and exits must be kept closed.

1.9.1 Rooms with low-level contamination

This can be rooms like laboratories or treatment rooms.

Work surfaces

Work surfaces must be cleaned and disinfected after each patient and when there is visible contamination by blood, pus, saliva, urine, feces or stool, etc., but at least once a day (at the end of working hours). The soiled areas must be disinfected with a disposable cloth soaked in disinfectant before the actual disinfection. The surface is then evenly moistened with the

disinfectant (ready-to-use product or self-prepared dilution and a cloth (wipe disinfection) so that a film of moisture remains. Under no circumstances should the residual moisture be removed with a dry cloth.

Floors

The floor is cleaned and disinfected as required (visible contamination by blood, pus, saliva, urine, feces or stool or similar) or at least once a week. The soiled areas must be disinfected with a disposable cloth soaked in disinfectant before the actual disinfection. The disinfectant solution is prepared according to the manufacturer's instructions and applied with a mop or similar tool so that a film of moisture remains. The wiping utensils must be changed after each room. The disinfectant solution must be renewed according to the manufacturer's instructions and when visibly soiled. Disinfectant solutions must always be freshly prepared and only dust-binding cleaning methods should be used.

1.9.2 Rooms with high-level contamination

This can be rooms with heavy soiling like caging rooms, stables and necropsies.

As soon as an infected animal is removed from its stable or cage the equipment and the equipment used with the animal must be immediately cleaned and disinfected. Floors, walls, equipment and furnishings are cleaned and disinfected; if necessary, the stable is subjected to preliminary disinfection before cleaning. The appropriate disinfectant is applied in liquid form or as a foam application, ensuring that the surfaces are sufficiently wetted and moisturized. Only efficacy-tested and DVG-listed disinfectants are used (https://www.desinfektion-dvg.de/index.php?id=2150). After the prescribed exposure time, the environment can be cleaned and then subjected to the final disinfection. When spraying with flammable disinfectants, ignition sources must be switched off as there is a risk of explosion. When using high-pressure cleaners, liquid-proof clothing, rubber boots, sturdy liquid-proof protective gloves, head protection and a full-face mask with a combination gas filter must be worn. The safety data sheets and operating instructions of the disinfectant manufacturers as well as the relevant Technical Rules for Hazardous Substances (TRGS) must be observed.

1.9.3 Furnishings

Here, wipe disinfection is carried out once a week and when necessary (visible contamination by blood, pus, saliva, urine, feces or stool, etc.). The disinfectant solution and the wipe must be renewed after each process and in the event of visible soiling.

1.9.4 Refrigerators

Refrigerators in which infectious material is stored must be emptied every 14 days, defrosted if necessary and disinfected by wiping. When using flammable disinfectants (alcohol-based agents), ignition sources must be kept away or avoided at all costs (pull out the mains plug!) and protective gloves and goggles must be worn. Defrost the refrigerator with the door wide open.

1.9.5 Vehicles

Vehicles must be designed in such a way that animal waste, bedding and feed cannot seep or fall out of the vehicle during transport. Hospital-owned and faculty-owned vehicles in which animals suspected of being infected have been transported to the hospital or within the faculty premises must be cleaned and disinfected with organic acids immediately by the user. PCE must be worn during this work. In addition, faculty-owned vehicles used to transport animals must be cleaned and disinfected after each transport or as instructed by the responsible veterinarian. Suppliers of animals or animal carcasses/parts of animal carcasses must be

instructed about the necessity of disinfecting vehicles or containers. Suitable disinfectants must be kept in stock by the clinics/institutes for this purpose.

1.9.6 Cleaning and disinfection of instruments and equipment

Disposable material

Used disposable material must not be reprocessed and reused. After use, disposable products must be disposed of in the waste bags or puncture-proof canisters provided for this purpose.

Reusable material

Used and, therefore, contaminated instruments, small appliances and glassware pose a risk to employees and trainees. Staff are required to wear protective gloves when handling used instruments. Instruments must be immersed in a solution of a combined cleaning and disinfectant agent immediately after use, before blood, secretions and tissue residues have dried and make the disinfection and cleaning process more difficult. The agent used should not have protein-fixing properties.

Scullery: Disinfectant trays with tight-fitting lids must be used. Care must be taken to ensure that all instruments are opened prior to cleaning and disinfection. In addition, all instruments have to be completely immersed in the solution and that no air bubbles remain in, e.g., narrow lumen cavities. Automated, chemical-thermal processes in laboratory washing machines should generally be favored over manual methods, both in terms of effectiveness and environmental hygiene.

Saturated steam sterilization ("Autoclaving"): All items such as glassware or surgical instruments that are repacked in stainless steel boxes are fitted with autoclave tape. Autoclave tape is necessary for process control.

1.10 Disposal of laundry and waste

1.10.1 Laundry collection and disinfection

Dirty laundry from work areas with a risk of infection for employees and students must be disinfected and washed in the central laundry. For this purpose, the laundry must be collected immediately after use in sufficiently resistant and tight containers (e.g., textile bags made of a material of at least 220 g/m² or plastic bags with a wall thickness of at least 0.08 mm) and the filled, well-sealed laundry bag must be stored and transported closed (do not throw or compress the laundry bag!). If wet, heavily soiled or boiled laundry accumulates and moisture penetration is to be expected, the laundry bag must be impermeable to water.

Note: Infectious laundry must not be sorted! Prior to doffing remove all syringes, needles and other sharp objects from pockets!

1.10.2 Waste collection and disposal

All waste must be categorized, collected and disposed of in accordance with the Waste Catalogue Ordinance (AVV) and the implementation aid for the disposal of waste from health service facilities of the Federal/Länder Working Group on Waste (LAGA).

Waste from clinical departments must only be disposed of in closed bags in the waste containers on campus. Infectious waste (e.g., from laboratories, course rooms, treatment rooms with a risk of infection) must be collected directly in sufficiently resistant, liquid-tight disposable containers that can be disinfected from the outside. Before removal, infectious waste must **a)** be disinfected or sterilized and **b)** securely enclosed. Pointed, sharp or fragile objects may only be disposed of in closed containers whose walls cannot be punctured. In the event of the occurrence

of an infectious disease, the regulations for combating the respective type of animal disease apply.

1.10.3 Animal by-products

Large animal carcasses are to be transported on the VMF premises (cadaver room Institute of Pathology) exclusively in stainless-steel tubs. A tarpaulin cover must be provided as a privacy screen. The VMF is authorized to handle animal by-products of categories 1 - 3 in research, teaching and diagnostics. However, the individual VMF facilities require registration by the veterinary office. The transport of Category 1 and 2 animal by-products and their movement, import and export require authorization from the competent authority (Veterinary Office or Saxon State Ministry of Social Affairs and Consumer Protection). The disposal of animal by-products from the Institute of Pathology (carcasses, organs) and the Institute of Food Hygiene (unfit carcasses, animal by-products) must be carried out via the state-owned rendering plant (details see chapter 10). Corresponding agreements must be made directly between the institutes and the rendering plant.

2 Chapter Research Laboratories

2.1 General requirements for personnel, students and visitors

A basic distinction is made between staff, students and visitors. Different guidelines apply for each group of people:

a) Staff/personnel (including project students): Before the first starting work, comprehensive biosafety and hygiene instruction and training is provided, supplemented by an annual refresher course and an occupational medical examination. Separate instruction and training may be necessary due to new activities or before starting work in special areas (S2 laboratories or isotope laboratories). The instructions and trainings are normally given orally and need to be confirmed by signature. However, instructions can also be given online and confirmed on site or on-line by signature.

b) Students: Before the start of practical training, students receive instruction on the relevant safety and hygiene rules. These safety and hygiene instructions can be made available to students in the form of the internship regulations or as videos. Accompanying on-site instructions are usually given. The students confirm by e-mail (Institute of Bacteriology and Mycology and Institute of Virology) or signature that they have been instructed.

c) Visitors: Access to the laboratory rooms is only possible after prior registration and when accompanied by staff. Cleaning staff and handymen are only given access to the laboratory rooms after instruction. The staff reserves the right to prohibit access due to work processes.

2.2 Access restrictions

Unauthorized persons are generally prohibited from entering the laboratories and areas with access restrictions. Before entering the laboratories and areas with access restrictions, visitors, technicians and service personnel are informed about the existing risks and the applicable behavioral measures. They can access the area only accompanied by personnel. In addition, minors or pregnant women may be prohibited from entering. The exact regulations are set out in the operating instructions and laboratory regulations of the respective institutes and laboratories. Areas with access restrictions are visibly marked with signs, such as the official biohazard sign, might be followed by genetic engineering area S1/S2 (“Sicherheitsstufe”), access prohibited for unauthorized persons.

These areas have additional hygiene and safety regulations. Access is only permitted after proper instruction, confirmed by signature, and in the company of trained staff.

Access to the Isotope laboratories is only permitted after radiation protection training by the radiation protection officer. Minors are generally prohibited from entering the Isotope laboratories.

2.3 Type of activities

Facility	Type of Activity
Institute of Anatomy, Histology and Embryology	Preparation of macroscopic and microscopic specimens for teaching purposes, microscopic staining incl. immunohistochemistry and immunofluorescence, cell culture, electron microscopy Training students in macroscopic and microscopic anatomy using appropriate preparations (fresh and fixed)
Institute of Animal Hygiene and Veterinary Public Health	**Research:** molecular biology, cultivation of infectious agents (bacteria, viruses), S2 laboratory **Teaching:** disinfection, water testing, air quality testing, outside the S2 laboratories

Institute of Animal Nutrition, Nutrition Diseases and Dietetics	Various analyses of feed and animal samples (blood, urine, feces, tissue) to determine the nutrient content, physiological parameters or molecular biological issues
Institute of Bacteriology and Mycology	**Research:** cultivation of biological agents (bacteria and fungi) including genetically modified and zoonotic pathogens up to risk group 2, genotypic and phenotypic analysis of these agents, experimental infection of piglets with pathogenic streptococci **Teaching:** phenotypic investigations for identification of cultures of biological agents (bacteria and fungi) on solid media
Institute of Immunology	Molecular biology, immunology, cultivation of infectious agents (fungi, bacteria, viruses), S2 laboratory **Teaching:** immunology and molecular biology methods (e.g. ELISA, flow cytometry) without infectious agents
Laboratory Large Animal Clinic	**Research:** development of hematological, cytological and chemical methods for native biological samples, validation and revalidation of used methods **Teaching:** chemical, hematological and cytological examination of native samples from hospitalized animals
Institute of Parasitology	**Research:** detection and morphological/molecular analysis of parasites in samples from several animal species in feces or tissue, infection experiments with parasites in several in vitro models including genetically modified and zoonotic pathogens up to risk group 2, experimental infection of calves with *Cryptosporidium parvum* for parasite isolation **Teaching:** morphological identification of several parasitic stages fixed on object slides or in case of eggs, oocysts and larvae fixed and given liquid on object slides
Institute of Pharmacology, Pharmacy and Toxicology	**Research:** Genetic engineering work of safety class S1, cell culture work with cell lines (S1 and non-S1) and primary cells, handling of animal samples **Teaching:** cell culture work with cell lines (S1 and non-S1) and primary cells, handling of animal samples
Institute of Physiological Chemistry	**Research:** Cell culture work with various cell lines and microbiological work with various E. coli strains, protein biochemical and molecular biological analyses; radio and enzyme immunoassay (RIA, EIA) **Teaching:** Biochemical analyses of samples modeled on disease patterns relevant to veterinary medicine
Institute of Physiology	**Research:** Genetic engineering work of safety class S1 and S2, handling of fresh human and animal samples. **Teaching:** Physiology exercises in separate course rooms at the institute, handling fresh blood and urine samples, self-experiments and PC-supported simulations
Institute of Virology	**Research:** cultivation of biological agents (viruses, bacteriophages) including genetically modified and zoonotic pathogens up to safety level 2, genotypic and phenotypic analysis of these agents, experimental infection in different animal models **Teaching**: culture and quantitation of viruses in culture, antibody detection of virus infections by antibody and molecular methods including sequence analysis

2.4 Laboratory classes

Facility	Research and Teaching
Institute of Anatomy, Histology and Embryology	Fresh and fixed animal material (all animal species, different origins), no animal carcasses are brought to the institute that are proven to have an infectious disease. Laboratories: possible materials up to risk group 2
Institute of Animal Hygiene and Veterinary Public Health	Hand disinfection, sterilization, water analysis, air quality testing
Institute of Animal Nutrition, Nutrition Diseases and Dietetics	Contact with feed that may be contaminated by pathogens, molds, etc.; contact with animal samples
Institute of Bacteriology and Mycology	**Research:** with risk group 2 pathogens (TRBA 466, German law on genetic engineering) including work with liquid cultures and multiresistant strains **Teaching:** risk group 2 pathogens TRBA 466 (common pathogenic bacteria and fungi such as *Staphylococcus aureus* and *Microsporum canis*, respectively, work with lager volume of liquid cultures and multiresistant, highly virulent strains is excluded (e.g. no work with MRSA)
Institute of Immunology	Patient and laboratory animal material with incomplete knowledge of the infection status (treated as S2) Infectious agents (BioStoffV and GenTG) like *Cryptococcus sp., Candida sp., Streptococcus sp.* Students are not currently exposed to any biohazards
Laboratory Large Animal Clinic	**Research:** potentially infectious biological samples according to TRBA 100 for non-targeted work from a wide range of animal species **Teaching:** native blood and urine samples from hospitalized animals in small volumes (less than 1ml), blood smears and cytological biologics fixated on a microscopic slide and therefore not infectious anymore
Institute of Parasitology	**Research:** with risk group 2 pathogens (TRBA 464, German law on genetic engineering) **Teaching:** all parasitic stages given to students are fixed and therefore, not infectious anymore
Institute of Pharmacology, Pharmacy and Toxicology	Genetic engineering work of safety class S1, cell culture work with cell lines (S1 and non-S1) and primary cells, handling of animal samples
Institute of Physiological Chemistry	**Reseach:** Working with human, bovine and murine cell lines of risk groups 1 and 2; Work with *E. coli* strains of risk group 1 **Teaching**: Use of *Saccharomyces cerevisiae* (risk group 1), other sample material is produced synthetically to rule out infection or health risks
Institute of Physiology	**Research:** project students, postgraduate students. research projects, genetic engineering safety level 1, 2 **Teaching:** Blood, urine, and rumen fluid samples from the clinic are used in the physiology exercises. The samples come from animals in which no infectious disease has been proven or is suspected.
Institute of Virology	**Research:** up to BSL-2 according to TRBA 100, TRBA 462 and the German Genetic Engineering Act **Teaching:** up to BSL-2 according to TRBA 100 and TRBA 462

2.5 Instructions/training

Before starting work for the first time, postgraduate students and staff are given a safety briefing by the responsible laboratory employee on the general and specific biohazards, the handling of biohazardous substances and the general working rules in the laboratories, including the valid procedures for entering and leaving the laboratory unit. Staff, including postgraduate students and student assistants, are also regularly trained in the handling of biohazardous substances or instructed on an ad hoc basis.

The exact biosafety rules are set out in the operating instructions, laboratory regulations and hygiene plans of the respective institutes and laboratories.

Student internship

Students are provided with a general safety briefing before the start of the internship, the contents of which must be noted. In addition, on the first day of the internship, oral, workplace-related instruction is given by institute staff. Students may not work with sample material, biological substances or equipment until they have received prior instruction from institute staff. Students work under supervision including ad hoc instructions.

Institute of Bacteriology and Mycology and **Institute of Virology**: Students are instructed via videos and further documents on moodle prior to the course "bacteriology and mycology" respectively "Viro Lab Skills". "The bacteriology and mycology" course resp. the course "Viro Lab Skills" follows a specific biosafety work flow including handling of lab coats, separation of areas for work with infectious agents and writing on the bench and specific rules on examinations of cultures and disinfection. The realization of the specific biosafety work flow is part of the practical examination in bacteriology and mycology.

2.6 General Rules, PPE, Special features in the context of teaching:

Staff, postgraduate students and students who are pregnant or are being treated with immunosuppressive therapy are asked to inform the supervisor/head of the Institute. Due to the risk assessment, there may be restrictions and prohibitions on handling hazardous and biological substances.

Institute of Bacteriology and Mycology, **Institute of Parasitology** and **Institute of Virology**:

Students who are pregnant or are being treated with immunosuppressive therapy are generally not allowed to participate in the course and are asked to contact the head of the Institute. Eating, drinking, smoking and the use of cosmetics (e.g., lip care products) is prohibited in the laboratory and course rooms. The exception to this is the use of the skin care products provided in accordance with the hygiene plans. Long hair must be tied back and scarves (not voluminous) should always be worn covered underneath the lab coat. Whether scarves, shawls, jewelry or wristwatches may be worn is specified in the operating instructions of the respective institutes. These are generally not touched with gloves. **In the event of contamination, disinfection is carried out in accordance with the hygiene plans and no liability is assumed for damage.**

Whether small electronic devices such as calculators, notebooks or smartphones may be used is specified in the operating instructions of the respective institute or is determined by the supervisors. These are generally not touched with gloves. **In the event of contamination, disinfection is carried out in accordance with the hygiene plans and no liability is assumed for damage.**

If writing workstations are available in the laboratory rooms, these are to be used exclusively for written work/documentation. Gloves must not be worn here.

Personal protective equipment (PPE) appropriate to the activities and premises must be worn:

Lab coat, shoes and street wear:

- White, long-sleeved, knee-length lab coats that are always closed must be worn in the laboratories and course rooms. Course rooms must be entered with lab coat. Visitors are provided with a lab coat.
- **Institute of Bacteriology and Mycology**: The lab coats are only worn in the bacteriology and mycology course and in the respective practical examination. After the practical

examination, the lab coats are washed and disinfected and then handed out to the students by personnel of the institute.
- Separate Lab coats are worn in S2 areas.
- Lab coats must not be worn in canteens, social areas or meeting rooms.
- Lab coats are kept separate from street wear and bags. Bags, jackets and personal stuff are generally kept in the changing room or the wardrobe outside the laboratories.
- Generally, closed-toe shoes and long pants must be worn.
- Separate autoclavable shoes or disposable overshoes are worn in S2 areas.

Gloves:
- Disposable gloves (nitrile or latex) are provided.
- Disposable gloves must be worn when working with hazardous substances, biological substances (infectious, sensitizing, toxin-forming) or other health hazards.
- Telephones, door handles, taps etc. are not touched with gloves unless there are specific instructions to do so.
- Contaminated gloves are only disposed of after inactivation.
- **Institute of Bacteriology and Mycology**: Students generally do not work with disposable gloves in the course. Exceptions are students with dermatitis or injuries. It is a main objective of the course to train students in a specific work flow to avoid contamination and raise a high awareness of biohazard. Gloves often provide an erroneous feeling of biosecurity.
- **Institute of Parasitology**: Students generally wear nitrile gloves in the course only during examination of fixed parasitic stages in liquid.

Respiratory protection and safety goggles:

Depending on the activity and potential risk, it may be necessary to wear respiratory and eye protection. Suitable respiratory protection and safety goggles are usually provided. Skin injuries or open wounds must always be adequately covered. They must be reported to the project manager/supervisor. Depending on the wound, a decision will be made on how to deal with it. The project manager/supervisor may prohibit the commencement of work in laboratory S2. Injuries that occur during the activity or during the course must be reported to the supervisor immediately. The supervisor is responsible for first aid and documentation. Chewing fingernails, hands, chewing gum and pens is strictly prohibited. Touching mouth, nose and eyes should be avoided during microbiological work. The workplace must be kept tidy. Infectious material is not placed directly on the bench, but only on the board with the biohazard sign or in the disposal containers with the biohazard sign. Infectious material should remain open for as short a time as possible and be disposed of as quickly as possible.

Institute of Bacteriology and Mycology and **Institute of Virology**:
- To test the odor of bacteriological cultures, students take the sealed, closed culture medium in their hands, open to a small gap and place the slightly opened culture under the nostril. Students are not allowed to test the odor of mold cultures.
- Any splashing or spilling of examination material must be reported immediately to the supervisor of the course.
- If contamination is suspected, students need to initiate thorough disinfection of the contaminated areas immediately and disinfect their hands.
- After completing activities involving biohazardous or hazardous substances or at the end of work in the laboratory or at the end of the course, hands are cleaned and disinfected in accordance with the hygiene plans

Institute of Bacteriology and Mycology, **Institute of Virology** and **Laboratory large animal clinic**:

At the end of the course, hands must be disinfected (at least 2 min contact time!) and afterwards washed following the list of rules placed immediately next to the hand basin.

2.7 Cleaning Disinfection

Surfaces are cleaned and disinfected before and after use. The disinfectants used must be appropriate for the pathogens used. See hygiene plans. Equipment and material: See hygiene plans. Cleaning and disinfection during and after student courses in the course rooms is carried out by the staff, unless other regulations apply. Cleaning and disinfection during laboratory work is carried out by the person carrying out the experiment.

2.8 Disposal of material (infectious/non-infectious)

All infectious/noninfectious waste from the course and the institute disposed in accordance with the legislature. For details: see hygiene plans and operating instructions in the annex.

3 Chapter Department for Small Animals

It is essential for all students, clinicians and staff to be familiar with the basics of hygiene and personal protection and general infection control guidelines. All persons working in the Small Animal Hospital (SAH) are responsible for maintaining cleanliness in the facility.

3.1 General attire for the small animal hospital (SAH)

The SAH uses hospital-dedicated attire for all staff and students in order to decrease the risk of carrying infectious pathogens home and limit the possible exposition of people or other animals. All staff members and students are required to wear clean professional attire, clean protective white coats and clean appropriate footwear at all times when working in the SAH.
Consultations: SAH attire with white coat;
Intensive Care Unit (ICU): SAH attire with white coat;
Anesthesia and Surgery: scrubs (top + trousers) and white lab coat when leaving the OR theatre; **Isolation:** dedicated full cover not to leave the isolation ward.
Protective outer garments should be changed and shoes cleaned and disinfected when contaminated.

3.2 Patient hygiene

SAH patients are housed in clean cages. Cages are cleaned and disinfected before introduction of a new patient. Hallways and access to cages are cleaned and disinfected on a daily basis. The cleaning and disinfecting cycle is increased is case of high contamination load. Water bowls and feeding bowls are regularly cleaned during the hospitalization of an animal and should not be changed between animals. When patients soil themselves, they are washed and dried accordingly.

3.3 Food and beverages

Food and beverages may only be stored in the dedicated students and staff cafeteria and in the staff offices. In the cafeterias, a refrigerator and a microwave are available for human use only.

3.4 General cleanliness and hygiene

Maintaining hospital cleanliness and appropriate personal hygiene are responsibilities of all staff and students working in the SAH. Hands must be washed and disinfected with an alcohol-based hand sanitizer prior to and after handling each patient. Clean disposable examination gloves should be worn when handling high-risk and highly susceptible patients (i.e. immunocompromised) or in case of contact with excretions, secretions, or wounds. Surfaces and equipment contaminated with feces, secretions, or blood must be cleaned and disinfected by students and/or staff in charge of the patient.

General disinfection protocol: Clean and disinfect all equipment between patients. Students' own equipment including scissors, thermometer, stethoscope and penlight should be routinely cleaned and disinfected. All instruments, equipment and other objects including stomach tubes, mouth speculums, endoscopes, grooming tools, clipper blades, etc.) must be cleaned and sterilized or disinfected between uses. A manual of procedures is available at all times.

Walking area for dogs: This area should be cleaned daily and directly after each defecation. Dedicated dog dropping bags are used to remove and contain feces for disposal. The isolation station has its own dedicated outdoor area.

3.5 Guidelines for the management of outpatients and inpatients in the SAH

Small animals with no signs of contagious disease may be accompanied by the owner in the waiting room. Outpatients should be taken into inpatient areas as little as possible. For inpatients beds, blankets, collar tags and leashes must be returned to the owner to prevent loss and possible contaminants. Cages are prepared and provided with the appropriate identification and if needed additional warnings. Diets containing raw meat or bones are not allowed in the SAH. For hospitalized patients, the chart including prescribed medication is affixed to the cage. Medications, and other materials used for hospitalized patients are stored in the medication cart or in the box attached to the patient's cage. All medication and material dedicated to a patient should be clearly identified.

All food must be stored in appropriate bags, cans or plastic containers with tight fitting covers in the patients' kitchen. Only minimal amounts of food should be stored in the SAH kitchen refrigerator in order to avoid its´ contamination. If a new can is opened, the opening date should be clearly stated on the outside of it and a plastic cover must seal it before storage in the refrigerator. All cans opened for more than two days should no longer be used.

Occupied cages are cleaned at least twice daily by students, technical staff, interns or clinicians and re-bedded if necessary. If cages are soiled or wet meanwhile, students, technical staff and veterinarians are responsible for noticing, cleaning and re-bedding.

Prior to discharge, animal owners must be informed on potential infectious hazards and provided recommendations on their control at home. The anticipated time and date of discharge should be mentioned on the whiteboard and communicated to the nurses, intern and student in charge, in order to optimize patient hygiene by the time of discharge. When the patient is discharged, its card should be placed in the technical staff office, and the cage should be cleaned as soon as possible. For the hygiene concerning the outdoor area surrounding the SAH, the parking area and its surrounding lawns will be checked at least monthly in order to remove all remaining feces. The area should be cleaned, including concrete surfaces, at least once a year.

3.6 Management of patients with suspicion of a contagious disease

Special precautions are required when managing patients known or suspected to be infected with contagious pathogens. Because of their potential for hospital-acquired transmission, special conditions of concern include patients with acute gastrointestinal disorders (e.g.: diarrhea), acute respiratory tract infections, or infections by multidrug-resistant bacteria.

Animals with suspicion of contagious disease should be treated as outpatients whenever their clinical condition allows it. Appointments for possible infectious disease will be handled by the receptionists, staff and students, receiving cases as follows. If a client call mentions acute vomiting, coughing, sneezing or diarrhea, suspected to be caused by a contagious disease, he/she will be asked to keep his/her companion animal in the car until checked in. Once students and staff are ready the patient can be brought directly to the dedicated emergency examination room. The patient should be transported in a way minimizing the risk of contamination of the SAH environment. In case the suspicion of a contagious disease is confirmed, the patient is transferred to the isolation ward. If a patient is brought to the reception without earlier notice, and the suspicion of a contagious disease arises, the receptionist notifies the staff and the patient is separated from other animals in the waiting area as soon as possible. Initial evaluation is continued in the dedicated emergency examination room. Primary aim is to minimize direct contact between the patient and other SAH patients. The examination room, contact and diagnostic areas, hospital equipment, staff and students clothing should be cleaned and disinfected immediately after contact with potentially contagious patients.

4 Chapter Department for Birds and Reptiles

A: Hospital Biosafety SOP

4.1 General attire for the Clinic for Birds and Reptiles

Maintaining the cleanliness of the clinic, animal housing, laboratory, necropsy room and appropriate personal hygiene is the responsibility of all. No eating or drinking is permitted in the clinic, animal housing, laboratory, necropsy room, cleaning and disinfection rooms. Smoking is prohibited in the entire building. The wearing of earrings, rings, bracelets, necklaces or other jewelry that could endanger the animals during handling or pose a risk of injury during the handling of animals is prohibited.

Non-targeted activities involving biological agents of risk groups 1 to 3 are carried out as part of curative and diagnostic veterinary activities, see Annex TRBA 260 and TRBA 100. The wearing of work coats and non-slip work shoes is mandatory in the clinic (ground floor), laboratory (first floor) and necropsy room (basement). Please note that work coats are available for the respective work areas and separate non-slip work shoes are available for the necropsy room and that it is not permitted to enter the work areas with protective work coats or work shoes from the other work areas. A change of work coats after the examination and/or treatment of patients with infectious diseases is mandatory. The work coats are provided and are deposited in the laundry collection containers provided for this purpose after use. Access to the laboratory, necropsy room and animal husbandry area is restricted to employees, doctoral students and students of veterinary medicine as part of their training. The laboratory, necropsy room and animal husbandry areas are separate rooms and are marked accordingly with a ‘No access for unauthorized persons’ sign. The rooms can be locked.

4.2 General Cleanliness and Hygiene

Hands must be washed and disinfected with an alcohol-based hand sanitizer and soap before and after each contact with patients, when working in the laboratory, the necropsy room and after removing protective gloves. In the case of suspected or laboratory-diagnosed isolation of risk group 2 infectious agents (see TBRA 460, TBRA 462, TBRA 464, TBRA 466) or wounds on the hands, the wearing of disposable latex gloves is mandatory. Surfaces or equipment contaminated with feces, secretions or blood must be cleaned and disinfected immediately by all staff and students in accordance with the hygiene and disinfection plan (see appendix). Biological contamination is removed using cellulose soaked in a disinfectant (HS EuroSept®) and subsequent wet cleaning and wipe disinfection. Clean and disinfect all equipment (forceps, scissors, nail scissors, button cannulae, beak spreaders, tremel attachments, falconer's gloves) with HS EuroSept® after use on a patient and place the equipment in the containers provided for this purpose at the washbasin. Cleaned devices are sterilized daily in the sterilizer. If mites, louse flies or ticks are found on a patient, the patient must be treated to kill these ectoparasites. In particular, it must be ensured that these ectoparasites do not escape. As a rule, biological substances are not stored. In individual cases, sealed retained samples are stored in a freezer located in the laboratory at -20°C, fixed in ethanol or stored as preparations for didactic demonstration purposes in the preparation display cases provided for this purpose. All hazardous substances present are labelled in accordance with the GefStoffV and the attached risk and safety phrases must be observed. When working with substances and preparations that are hazardous to the skin and may have skin-damaging effects after skin contact (e.g. through corrosive and/or irritant effects) (H310, H311, H312, H314, H315, H317), disposable latex gloves or household latex gloves must be worn. Greasy ointments to protect the skin are available to employees. Appropriate disposable latex gloves must be worn, especially when handling formalin and methanol (DiffQuik, fixation).

4.3 General rules for keeping employees healthy and in the event of an accident

Requests for occupational medical check-ups must be complied with. Pregnant employees and students are prohibited from coming into contact with animals to be treated, chemicals and/or X-rays. Pregnancy must be reported immediately to the occupational health and safety officer Dr V. Schmidt (38401/ 422/ 404). Injuries or accidents must be reported immediately to the veterinary surgeon present and to Dr V. Schmidt (38401/ 422/ 404) and documented in the first aid book. The first aid book is located in the registration office (Mrs. Zastrau, 38405/ 420). Accidents that result in a visit to the doctor must be reported to the Office for Environmental Protection and Occupational Safety by means of an accident report (BfUA homepage). If first aid measures are necessary, please contact Mrs. Fink (secretary 38400), Mrs. Krüger-Grötzsch (Registration desk 38405) or Mr. Drehmann (Aninmal stables 38878).

4.4 Hygiene concept for group work in the small clinic rotation and propaedeutics

The group size in the exercises is limited to 18 students and the examination room E012/1, An den Tierkliniken 21a, of the outdoor stable of the Clinic for Birds and Reptiles. The attendance check for the exercises takes place immediately before the start of the exercise. All students must wash and sanitize their hands before entering the event. All students must wear a work coat. This must be put on before entering the examination room. There are no facilities for storing jackets or bags, so these must not be brought to the exercise. Earrings, rings or other jewelry that could endanger the animals during handling must be removed. Washing and disinfection facilities as well as disposable gloves and overshoes are available in the room used and will be provided for each student. The room used will be ventilated during the event, unless an escape of the birds makes it necessary to close the windows. The examination table will be disinfected with a surface disinfectant (HS EuroSept®) after the end of the exercise and before leaving the room. At the end of the event, the disposable gloves and overshoes are disposed of in the waste bin provided for this purpose.

4.5 Guidelines for the admission and treatment of patients

The handling of animals for the purpose of examination or therapeutic measures is the responsibility of the employed veterinarians or may only be carried out by other persons in the presence of a veterinarian. Instructions from the veterinary staff must be followed accordingly.

Birds suspected of being infected with avian influenza viruses may not be brought to the clinic and will not be examined and/or treated. Poisonous animals will not be examined and/or treated. Examination and treatment of birds and reptiles will be done at least in pairs, depending on the strength and size of the animal. In order to reduce the risk of infection and stress for patients, patients are admitted by appointment. Appointments are allocated every 20 minutes, more complicated ones every 30-60 minutes (see SOP collection A07 Appointment diary and appointment allocation in VETERA). Only one appointment should be allocated per time unit. Appointments without an appointment, e.g. emergencies, are treated in parallel in the second examination room. It is strictly forbidden to enter a room without being asked while an appointment is in progress. It is strictly forbidden to bring a patient into a consultation room before the tables and equipment have been cleaned and disinfected by a member of staff. Before entering the consultation room, a standardized anamnesis form is completed by the patient owner in the waiting area and usually entered into the digital practice management system by the veterinary assistant (see SOP collection A01 VETERA - Creating a client/animal, entering the death of the animal).

The clinical examination, sampling, diagnostic imaging and/or treatment of a patient is always carried out by at least two people under the presence and guidance of a veterinary employee. The documentation of examinations, suspected diagnoses, consultations and treatment instructions are carried out digitally in the practice management system (see SOP collection A05

Communication with animal owner, communication HTA, doctor's letter, referral, documentation). In the case of an inpatient admission or a planned procedure under anaesthesia, appropriate information about the risks is provided. The pet owner signs the documentation on the routing slip form. Findings and treatment instructions must be updated digitally in VETERA under Ward Patients and analogue on the Ward Treatment form on a daily basis (see SOP collection A06 Ward Patients, entries in cards).

Samples or animal carcasses are taken for laboratory diagnostic or pathological examination in the laboratory or necropsy room. When wild bird finders call, it must be clarified which species is involved. In the case of birds of prey, waterfowl and poultry, there is a risk of infection with avian influenza viruses, so that if several dead birds are found in the vicinity of the animal, it must not be moved (see SOP collection SHK01 Emergency service telephone). If the bird is a healthy juvenile or nestling, NABU or a wild bird care center should be informed (for contacts, see SOP collection VO1 Wild birds, reception). Only injured wild birds are admitted, these can also be handed in at the clinic on Saturday and Sunday from 10am to 12pm and 5pm to 5.30pm.

4.6 Patient biosafety (non-infectious, infection with risk group 1 or 2 pathogens, highly infectious)

Non-infectious and low risk patients

Inpatients are housed separately for reptiles, exotic birds (generally Psittaciformes and Passeriformes), pigeons, poultry, birds of prey and owls, wild birds. Reptiles, exotic birds and pigeons with non-infectious diseases or with risk group 1 or 2 infections (with exclusion of animals with suspected/detected viral disease, mycobacteria, salmonella, *Listeria monocytogenes*, *Yersinia pseudotuberculosis*, mycoplasmosis or multi-resistant microbes) are kept in the animal housing rooms in the clinic for birds and reptiles. Exotic birds are housed in the clinic's own cages in cleaned and disinfected cages in cleaned and disinfected digester rooms, each of which has separate exhaust air. Reptiles are housed in the clinic's own cleaned and disinfected terrariums or cleaned and disinfected plastic boxes. Pigeons are housed in cleaned and disinfected transport or plastic boxes. Poultry, birds of prey, owls and wild birds are kept in cleaned and disinfected indoor aviaries in the animal housing rooms of the annex building of the Clinic for Birds and Reptiles, An den Tierkliniken 21a. Animal owners and/or visitors are not permitted to visit hospitalized animals or the animal housing areas. Transport containers are taken to the cleaning and disinfection room, cleaned and disinfected and stored until the patient is released.

Patients with infectious diseases

If an infectious disease with a probability of excretion of viral pathogens, risk group 2 pathogens or an infection with multi-resistant microbes is present, this is indicated both on the housing facilities and on the ward sheet, so that these patients must be treated last. If a patient is suspected of having avian chlamydiosis, tuberculosis, Newcastle disease or West Nile virus disease (risk group 3), the bird will be examined and placed in the authorized isolation room E012/1, An den Tierkliniken 21a, which is located away from the main building of the Clinic for Birds and Reptiles. In addition to the obligatory disposable overalls, the wearing of disposable latex gloves, breathing masks and eye goggles is mandatory. If a viral disease or an infectious diseases of risk groups 2 and 3 are suspected, diagnostic clarification must always be carried out. The specification of bacteria and fungi is carried out using MaldiTof-MS at the Institute of Bacteriology and Mycology. The molecular biological detection of viruses, mycoplasms and chlamydia is carried out at the Institute of Virology. The molecular biological detection of *Toxoplasma gondii* is carried out at the Institute of Parasitology. The isolates, swab samples, blood samples and organ samples are transported in sealed plastic containers surrounded by plastic bags. In case of viral diseases, mycobacteriosis, salmonellosis, listeriosis, pseudotuberculosis, mycoplasmosis and infectious diseases of risk group 3 (*Chlamydia psittaci*, Newcastle disease virus,

West Nile virus) are suspected and/or confirmed by laboratory tests, reptiles, exotic birds and pigeons are hospitalized in the two quarantine rooms in the basement and poultry, birds of prey, owls and wild birds in the quarantine room in the adjacent building of the Clinic for Birds and Reptiles, An den Tierkliniken 21a. Patients are usually housed individually in the quarantine rooms. The three rooms have an anteroom with a locker for changing into work clothes (disposable overalls, disposable latex gloves, FFP-3 respiratory mask and eye protection goggles), equipment for examination, sampling and treatment, lockable waste containers and hand basins for cleaning and disinfecting hands. Patients with infectious diseases in risk groups 2 and 3 may not be moved to other rooms in the clinic or to the outdoor aviary area.

4.7 Feed, water, animal housing facilities and animal cages

Animal housing

The cleaned and disinfected cages and boxes are to be removed from the storage room (clean side) of the cleaning and disinfection unit in the basement of the clinic. Cellulose, cardboard or newspaper are used as floor coverings, which are changed daily. Unused flooring material can be found in the drawers in the animal housing rooms. Natural wood perches are used for the exotic birds and disposed of after the patient has been discharged. Fresh natural wood perches are placed in the cages in the storage room by the animal care staff. Blocks are used for falcons, buzzards and owls. A portable bow is used for hawks. After use, these blocks and bows are cleaned and disinfected. Artificial caves and artificial plants are offered to hospitalized reptiles. Unused artificial burrows and artificial plants can be found in the drawers in the animal housing rooms. Unused water and feed bowls and dishes can be found in the feed cupboard. Immediately after the end of use of the accommodation containers, food and water bowls, caves and artificial plants, these must be cleaned and placed in the cleaning room (dirty side) of the cleaning and disinfection unit in the basement of the clinic.

Feed and water

Food is offered to exotic birds, pigeons and poultry in appropriately sized feeding bowls, which are cleaned daily. Birds of prey and owls used for hunting are fed from the fist with thawed frozen food animals. Vegetables and fruit are offered fresh daily on a food skewer or, in the case of herbivorous and omnivorous reptiles, on a washable tray and removed by the afternoon at the latest and disposed of in the household waste. Insects are removed from the containers and fed individually, if possible, with tweezers. Frozen food in the form of food animals is stored in the frozen food freezer in the basement of the clinic. The date of storage and removal must be documented.

The drinking water for exotic birds, pigeons and poultry is offered in drinking bowls and in case of birds of prey and owls from shallow bowls with a large diameter.

4.8 Patient documentation and medication

General well-being, food and water intake, stool and urine output, body measurements, and examinations and findings are documented daily on the ward sheet and digitally in the practice management software during the rounds. In addition, any abnormalities during treatment are documented digitally, but at least once during the early and late shifts in the practice management software by the veterinarian on duty.

Patients infected with (multi)resistant bacteria and/or fungi pose a potential health risk to staff, students and other patients, so they are housed in quarantine units or at least a warning is posted on the housing facility and the ward sheet. These patients are treated last with protective clothing in the form of disposable gloves and a change of gown. Hands must be washed and disinfected after treatment. When antibiotics and antimycotics are administered, pathogens are isolated and an antibiogram is created in the clinic's own laboratory. The rules for administering

medication to animals used for food production are observed and antibiotic consumption is reported every six months in the antibiotics database (HI-Tier).

Before using a medication, the expiration date must be checked. The storage period for drawn-up medication should not exceed 15 minutes before administration. Opened multi-dose containers with preservatives should be used up within one month, those without preservatives within 24 hours. Multi-dose containers must be marked with the date and time when opened and no normal needles may be stuck in the rubber seal, only those with a special bacterial filter. A separate medication refrigerator is available for medications that must be stored cool. The storage temperature is checked and documented twice a day. For medications that do not require refrigeration, the storage temperature should be below 26°C. The room temperature is checked and documented twice a day. When removing ointments, lotions and creams, care must be taken to ensure aseptic removal using sterile spatulas.

4.9 Waste disposal

Biological waste from risk groups 1 to 3 is disposed of after inactivation by autoclaving in the basement of the clinic. Carcasses are disposed of after freezing in the carcass freezer in black carcass bags via the Institute for Veterinary Pathology. Syringes are disposed of in the plastic waste bin. Cannulas are disposed of in the yellow, wearable cannula collection bin. Empty infusion bottles are disposed of in the glass waste. Paper, including the inserts used in the housing facilities for non-infectious patients and patients with pathogens from risk group I, are disposed of in the paper waste.

4.10 Cleaning and disinfection of surfaces, accommodation facilities

Examination tables, the operating table, laboratory tables and the necropsy table are scrubbed and disinfected with HS EuroSept® immediately after each patient/examination. The work surface for preparing infusions and medication is scrubbed and disinfected with HS EuroSept® before and at the end of the consultation and when there is visible soiling.

4.11 Disinfection of instruments for treatment and examination

Only touch used instruments with gloves! Place in a disinfectant tray with a sieve insert and lid, observe the exposure time: Helipur H plus N® 1.5% 15 min

After the appropriate exposure time in the disinfectant, clean the instruments manually with instrument cleaning agent and with a plastic brush or sponge (no metal brushes), cleaning gun. After cleaning, dry the instruments, blow through hollow instruments e.g. button cannulas with compressed air. Sterilize surgical instruments with hands that have been hygienically disinfected beforehand. Continue processing instruments for sterilization. Carry out mechanical instrument cleaning for thermostable instruments chemo-thermally, place correctly on the sieve insert in the cleaning machine and switch on the corresponding program.

4.12 Cleaning and disinfection of floors, animal housing, indoor and outdoor aviaries

The digestors and terrariums are scrubbed and disinfected with HS EuroSept® immediately after each patient is discharged. This is followed by cleaning with running water. Cages, plastic tubs and transport boxes are disinfected after cleaning in a dip disinfectant (DEMENTION Hygiene Cleaner extra®) 5% for 2 hours and then washed under running water in the damp room of the cleaning and disinfection unit in the basement of the clinic. Wear non-slip rubber boots and chemical protection gloves in accordance with DIN EN 374 when using the product. Food and water containers, artificial caves and artificial plants are cleaned daily with a damp cloth using water and a brush and disinfected once a month with a wipe disinfectant (HS EuroSept®) for 60 s. In the case of diseases caused by coccidia or cryptosporidia, cages, plastic tubs, transport boxes, food and water containers, artificial caves and artificial plants are disinfected with

NEOPREDISAN® 2% for 2 hours. The floors in the clinic area are cleaned daily by sweeping and monthly wet cleaning and disinfection with HS EuroSept® 0.5% 30 min. The animal housing rooms, indoor and outdoor aviaries are cleaned daily by sweeping. Monthly wet cleaning with a Kerscher and disinfection with HS EuroSept® 0.5% 30 min. Annually, after wet cleaning with a Kerscher, disinfection with NEOPREDISAN® 2% 2 h is carried out. Doormats are disinfected once a month with ALOVET AS® or WOFASTERIL® 5% after removing coarse contamination. Wear non-slip rubber boots and chemical protection gloves in accordance with DIN EN 374 when using the product.

B: Ambulance Biosafety SOP

4.13 General cleanliness and hygiene for the ambulance

Maintaining the cleanliness of the ambulance and appropriate personal hygiene are the responsibility of ALL employees, users and students. Smoking is prohibited in the ambulance. Employees and students visiting poultry farms must have showered and wear fresh, clean clothing; there must be no contact with poultry in the 24 hours prior to the visit. Dogs are not permitted in the vehicle.

4.14 General hygiene measures

Disposable overalls and overshoes are provided by the Clinic for Birds and Reptiles and must be put on before entering the poultry farm. The animal owner's instructions must be followed in the poultry farm. The same standard of hygiene and work quality (hand washing, etc.) as described in the clinic SOP must be applied. The vehicle is cleaned after every trip. The edges are disinfected in the VMF vehicle cleaning system.

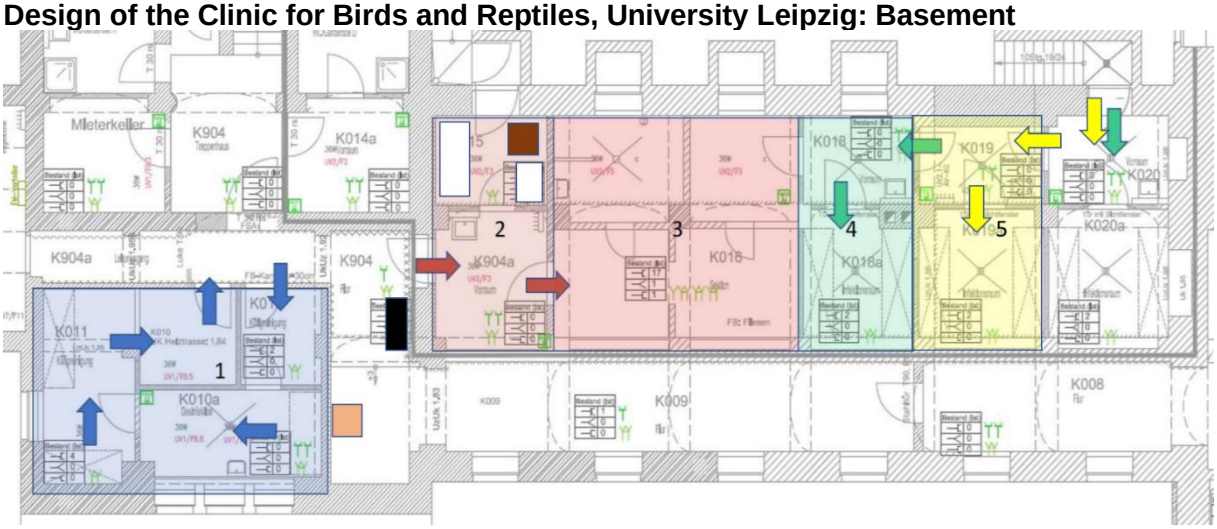
4.15 Management of patients with infectious diseases

When taking samples of feces, tracheal swabs, blood samples or carcasses, these must be clearly labelled, packed in a leak-proof manner in sealable plastic containers or black carcass bags and transported in a cool place and without delay to the laboratory or necropsy room of the Clinic for Birds and Reptiles.

4.16 Exclusion criteria for examination of animals during the ambulance

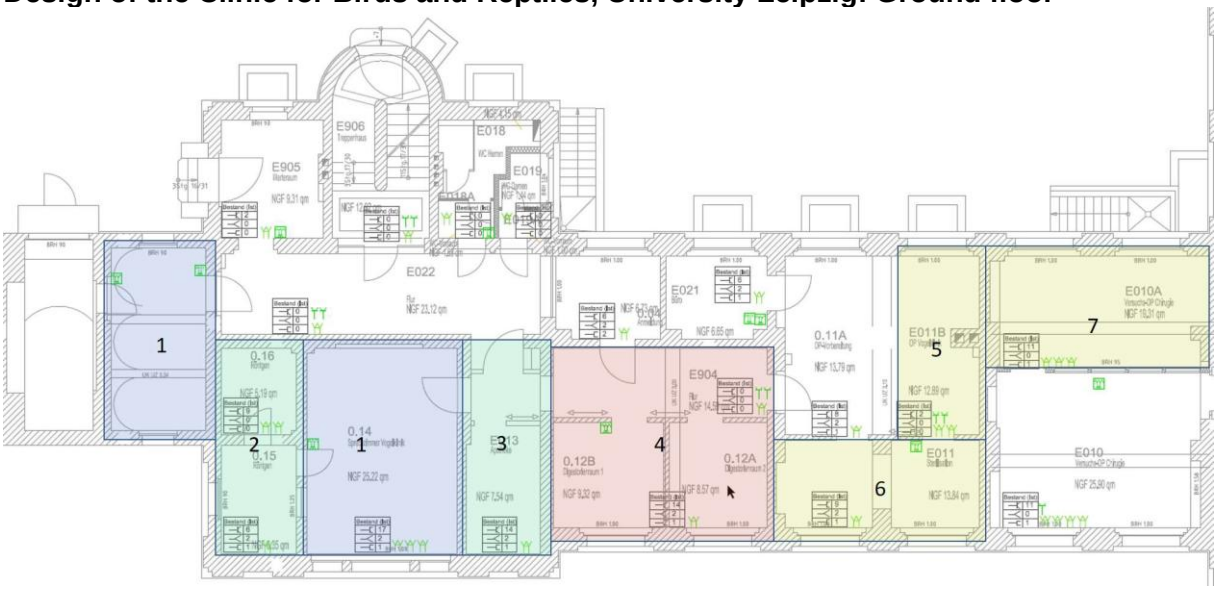
If mortality is >2% within 24 hours in a poultry flock or due to the epidemiological situation of avian influenza or Newcastle disease, a flock visit will not be carried out.

Design of the Clinic for Birds and Reptiles, University Leipzig: Basement



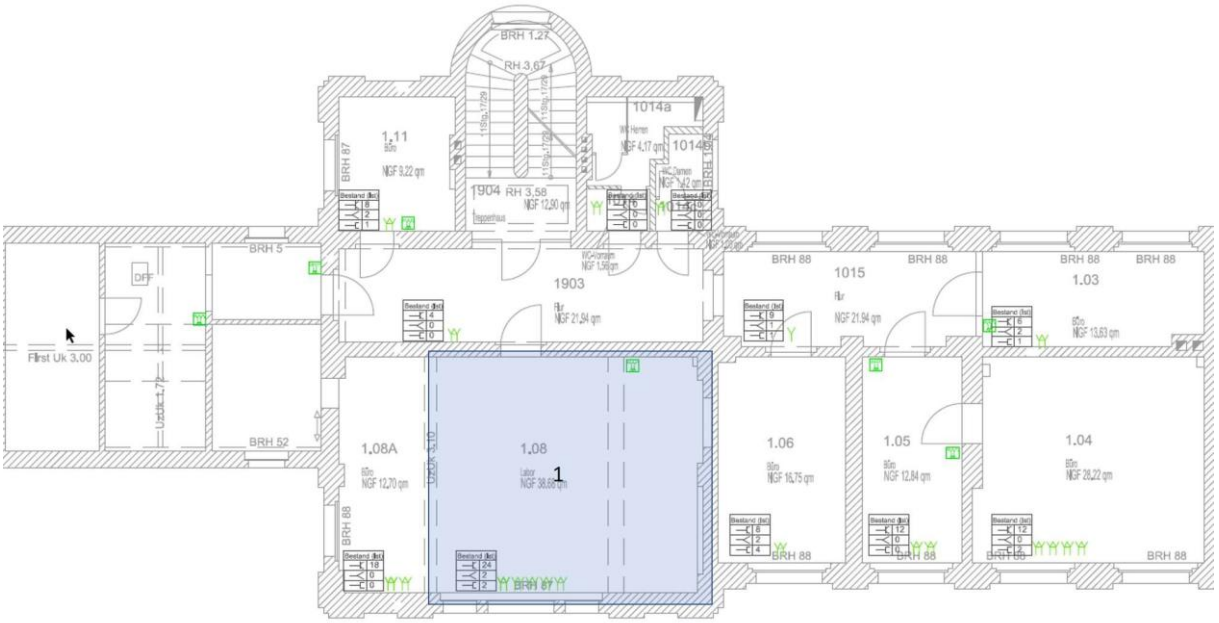
1 = Cleaning and disinfection of cages and equipment, blue arrows represent the way
2 = Airlock to the necropsy room, red arrows represent the way to the necropsy room
3 = Necropsy room
4 = Isolation room with an airlock for infectious psittacine, passerine birds or pigeons, green arrows represent the way
5 = Isolation room with an airlock for infectious reptiles, green arrows represent the way
brown square = Autoclave for biological waste; white rectangles = freezers for storage animal carcasses; black rectangles = freezer for animal carcasses to be disposed of; orange square = washing machine and freezer for frozen food

Design of the Clinic for Birds and Reptiles, University Leipzig: Ground floor



1 = Consultation rooms
2 = X-ray room
3 = Sonography room
4 = Hospitalization room
5 = Anaesthesia room
6 = Cleaning and sterilization of surgical instruments and pharmacy
7 = Surgery room

Design of the Clinic for Birds and Reptiles, University Leipzig: First floor



1 = Clinical laboratory for cytology, histopathology and microbiology

Design of the Clinic for Birds and Reptiles, University Leipzig: Isolation room in a separate building (An den Tierkliniken 21a)

1 = Isolation room with an airlock for infectious waterfowl and/or birds of prey/owls, red arrows represent the way to the isolation room
2 = Student lecture room

5 Chapter Department for Ruminants and Swine

Objective

These biosafety procedures describe the specifications for workplace hygiene including cleaning and disinfection measures as well as the disposal of infectious materials in the Clinic for Hoofed Animals (KfK) at the Faculty of Veterinary Medicine of the University of Leipzig.

The aim of these biosafety procedures is to provide rules of conduct for the prevention and control of communicable diseases. Employees and workers should be protected from infections and the spread of pathogens should be prevented. Compliance with specified measures offers effective protection against infections and other health hazards. This hygiene plan specifies the protective measures for activities involving biological agents in veterinary medicine and for comparable activities within the scope of its application and takes into account the requirements of the Biological Agents Ordinance and the Ordinance on Occupational Health Care. These biosafety procedures contain all internal procedures established by the hospital management to achieve this goal and is binding for all employees at the KfK.

5.1 Basic information

Activities involving biological substances in veterinary medicine include, for the Clinic for Hoofed Animals, the following:

- Activities in which animals are examined, treated or cared for by a veterinarian.
- The collection, processing, preparation and examination of samples and materials as part of clinical activities or the clinic's own laboratories or external (outpatient) activities.
- transport of animals
- existing trips

The scope of application includes activities that serve to supply and dispose of waste or to maintain the operation of the above-mentioned areas.

Activities in the clinic may only be carried out with protective work clothing. Activities also include:

- the seizure, capture and killing of animals
- the storage of animal carcasses or contaminated examination or treatment materials
- cleaning work related to veterinary activities.
- vehicle disinfection

Personnel involved in autopsies and laboratory tests to detect infectious and animal pathogens cannot be granted access to the animal facilities or can only do so after observing strict personnel and general hygiene measures (complete change of clothing and hand disinfection at least twice) and appropriate documentation. Access to the clinic by people who have had previous contact (within the last 3 days) with animals of the relevant species must be limited to the absolutely necessary minimum for farm animals. Visitors must be informed accordingly and before entering the animal housing areas, they must thoroughly disinfect their hands and shoes and put on a protective gown and overshoes.

Only suitably qualified employees may be employed for activities with a possible risk of infection. These are veterinarians, veterinary assistants, veterinary technical assistants, animal keepers or employees with appropriate experience and training in these areas. The activities may only be carried out if the employees can provide proof of qualifications to carry out the work correctly.

When carrying out cleaning and disinfection measures for the purpose of personal protection, the principle "first disinfect, then clean" must be observed.

Disinfectant dispensers should not be operated by hand if possible. If health problems occur that could be related to the microbiological work or the cleaning and disinfection measures, the clinic director must be informed and, if confirmed, the faculty's occupational safety specialist.

Only cleaning and disinfection agents that are registered in the relevant approval lists (RKI, DGHM, VAH) are used.

This hygiene plan is based on TRBA 260 and therefore does not apply directly to the clinic's own laboratories, which fall within the scope of TRBA 100 "Protective measures for activities involving biological agents in laboratories". However, reference is made here for overlapping activities.

If diagnostic work is carried out as part of clinical work (e.g. application of simple rapid laboratory tests and microscopic detection methods, application of orienting diagnostic cultivation methods in closed systems such as immersion culture media without further diagnostics, sample storage and sample packaging for transport), this is subject to the requirements of TRBA 100. In each individual case, the risk assessment must determine which TRBA is to be applied.

5.2 Definitions

Biological agents are conclusively defined in the Biological Agents Ordinance (BioStoffV). According to Section 3 of the BioStoffV, biological agents are classified into risk groups 1-4 according to their risk of infection for humans. If biological agents are classified in risk group 1, it is unlikely that they will become ill; if they are classified in risk group 4, there is a risk of widespread spread and serious illness. For certain biological agents that are classified in risk group 3 in Directive 2000/54/EC and marked with two asterisks (**), the risk of infection for employees is limited because they cannot normally be transmitted via the air. For the sake of simplicity, these are referred to below as biological agents in “risk group 3(**)”.

If sensitizing and/or *toxic properties play* a role, this is noted next to the classification in the above-mentioned guideline, regardless of the risk group. Other health-damaging effects can also occur as a result of infections or toxic effects. This includes carcinogenic or teratogenic/fertility-endangering effects. If the infectious properties of the biological agents are in the foreground, the term "pathogen" is also used in this TRBA.

Examination and treatment include all activities:

- intended to diagnose, cure or alleviate diseases, suffering or damage in animals
- obstetrics
- breeding hygiene.

These activities can be carried out on an inpatient or outpatient basis. *Inpatient care* includes activities such as caring for, observing and looking after animals in the clinic. *Outpatient care* includes examinations and treatments that are carried out in treatment rooms or at the location where the animals are staying. This could be, for example, stables or pastures.

Work clothing is clothing that is worn at work instead of or in addition to private clothing. Work clothing is clothing without a special protective function. Contaminated work clothing is work clothing that has come into contact with body fluids, body excretions or body tissue during activities. Contamination is not always visible to the naked eye.

Protective clothing is any clothing designed to protect employees from harmful effects at work or to prevent contamination of work or private clothing by biological substances.

Infectious biological agents can colonize the body on the surface. They can also penetrate into it and multiply within it, thus causing an infection. If the body reacts to an infection with clinical symptoms, an infectious disease has developed. Carriers of infectious biological agents can be

- body fluids, e.g. wound exudate, saliva, milk, lochial secretions,
- body excretions, such as feces and urine,

- animal tissues and cadaver.

Sensitization is defined as a hypersensitivity of the immune system to biological substances or their components. This can be triggered by one or more contact. Sensitization by biological substances can result in the development of an allergy.

Allergic diseases can occur in various organ systems, with chronic inflammation developing in the organ affected. In the case of an immediate allergic reaction, specific antibodies (immunoglobulins (Ig) of type E (IgE)) can be detected. Allergies particularly affect the interfaces between the organism and its environment. Accordingly, the diseases manifest themselves on the skin (atopic eczema), the upper respiratory tract (hay fever or allergic rhinoconjunctivitis) or the lungs (bronchial asthma). In addition to biological substances, there are also certain proteins that are contained in skin flakes, saliva, sweat, sebum and urine of animals and act as IgE-reactive allergens. Animal hair usually plays a central role in the spread of allergens. Through grooming and all types of excretions and secretions, the allergenic proteins stick to the hair and can spread very efficiently and widely in the environment.

Toxic effects of biological agents are acute or chronic health damage that can be caused by metabolic products or cell components of biological agents.

Qualified employees are persons who, due to their completed training and experience, can recognize infection risks and take measures to prevent them, e.g. veterinarians, veterinary assistants, veterinary technical assistants, animal keepers.

5.3 Risk assessment

Before starting work with biological agents, the hospital management must carry out a risk assessment in accordance with Section 4 of the BioStoffV and document the results in accordance with Section 7 of the BioStoffV. The risk assessment is the basis for determining

- how exposures can be avoided or, if that is not possible, reduced
- which safe working procedures are to be used and
- what measures need to be taken to control unavoidable exposures.

Based on the type of activity and the transmission routes of the biological agents that occur or have been diagnosed, it is necessary to check what risks employees may be exposed to. The duration of the activity and the frequency with which it is carried out must also be taken into account. Workplace aspects that may have an impact on the safety and health of employees must be included in the risk assessment. These include, for example, questions of work organization, the qualifications of those carrying out the work, psychological stress and existing time pressure. In this context, staffing levels, working hours and break arrangements must be taken into account.
The following activities generally pose a low risk of infection for veterinarians and the employees involved:

- general examinations
- Vaccinations and castrations if there is no suspicion of a zoonosis.
- blood samples
- activities where there is a low risk of bite and scratch injuries.
- activities involving brief contact with individual animals infected or colonized by a skin mycosis (dermatophytes).

The following activities may pose a medium risk of infection:

- activities that involve regular and not only minor contact with material potentially contaminated with pathogens, such as feces, urine or body fluids or tissues (e.g. lochial secretions, opening of carcasses).
- Activities where there is an obvious risk of infection, such as airborne infections, risk of bite injuries or risk of cuts from instruments used.

Activities involving contact with pathogens in risk group 3 can pose a high risk, for example:

- Influenza A outbreaks caused by corresponding serotypes
- acute Q fever
- tuberculosis
- rabies

Even the acceptance of the animal can lead to direct contact with potentially infectious secretions/excretions/body parts of the animal. Infectious material can leak out and lead to contamination of the delivering vehicle, the unloading area and the people involved, which poses a risk of contact infection by touching the contaminated areas. Accompanying documents (commercial documents, requisition forms, preliminary reports) can be contaminated by improper handling. When transporting the animal, both the use of lifting equipment and, above all, manual handling can lead to direct contact with the potentially infectious animal carcass and leaking body fluids with the formation of bioaerosols. Claws, teeth, bone fragments or cannulas still in the animal carcass can cause wounds in employees that can be contaminated by biological substances.

5.4 Protective measures

5.4.1 Minimum protective measures

Hazards should be combated at source wherever possible. Since biological agents that occur cannot be substituted, the following order of priority of protective measures applies:

1. technical/structural
2. organizational/hygienic and
3. personally.

For all activities involving biological agents, at least the general protective measures according to Section 9 BioStoffV or TRB 260 must be observed.

5.4.2 Work areas and work equipment

Surfaces (floors, work surfaces, surfaces of work equipment and devices) must be kept clean in accordance with the work process, they must be cleaned regularly and disinfected if necessary. When selecting these, care must be taken to ensure that they are corrosion-resistant, easy to clean and resistant to disinfectants. This also applies to walls if they can be contaminated.

All surfaces and treatment trolleys are cleaned before and after use with Meliseptol pure and disposable wipes. After surgery, operating tables are scrubbed and hosed down and then disinfected with Incidin pro.

5.4.3 Washing facilities

Employees must be provided with easily accessible hand-washing stations with low-contact fittings (e.g. single-lever mixer taps, pressure fittings or sensor-controlled), running hot and cold water, dispensers for skin cleansers and disposable towels, as well as suitable skin protection and skin care products. The possibility of hygienic hand cleaning and drying must also be provided at mobile and remote workplaces.

5.4.4 Shower facilities

Full-body showers must be provided if the risk assessment indicates that this is necessary. Reasons for this may be activities that involve high levels of contamination or a high level of germ contamination (e.g. stationary showers when treating or caring for farm or zoo animals or mobile shower facilities when combating highly contagious animal diseases on farms).

5.4.5 Hygienic hand disinfection/gloves

Disinfectant dispensers with approved disinfectants must be provided. For permanent workplaces, wall dispensers that can be operated with one hand or without touching should be used. During activities that require hygienic hand disinfection, hands, fingernails and forearms must be free of any objects such as jewelry, including wedding rings, artificial fingernails, watches and piercings; fingernails must be kept short and round and should not extend beyond the fingertips. Employees must be provided with suitable protective gloves and must wear them as long as there is a risk. Protective gloves must be worn:

a. to protect against contamination with potentially infectious substances in blood, pus, exudate, sputum, feces, urine, etc.
b. when examining, treating and caring for animals suspected of being infected with zoonotic pathogens (sufficiently resistant gloves to protect against the risk of injury) and
c. when working with substances that are harmful to the skin, such as disinfectant concentrates; protective gloves must be disinfected immediately after use (see hand disinfection) or disposed of (disposable material).

Hygienic hand disinfection must always be carried out:

- before and after patient contact
- after contact with potentially infectious materials or surfaces
- after any contact with potentially infectious material, e.g. blood, secretions, excretions
- when leaving the work areas
- after removing the protective gloves

5.5 Instruments

Used disposable material must not be processed and reused. After use, disposable products must be disposed of in the garbage bags or puncture-proof canisters provided. Used and therefore contaminated instruments, small devices and glassware pose a danger to employees and trainees. When handling used instruments, staff are required to wear protective gloves. The instruments must be placed in a solution of a combined cleaning and disinfection agent immediately after use, before blood, secretions and tissue residues have dried and make the disinfection and cleaning process more difficult. The agent used should not have any protein-fixing properties.

5.6 Vehicle disinfection

Many animal pathogens can be spread via vehicles (animal transport, hospital buses). If this is the case in a current case, every vehicle that has left the infected farm or affected part of the farm must be effectively cleaned and disinfected before leaving the premises or immediately after the outbreak is reported. Particular attention must be paid to the tires, but contamination can also occur in the driver's cab.

To prevent the spread of disease by vehicles, only the outside, especially the tires and chassis, is usually disinfected during disinfection measures. Critical parts are tires, wheel arches, running boards and the lower edges of the tailgates. After transporting animals that are infected or suspected of being infected, the vehicle loading areas must also be included in the disinfection measures. A three-step process (soaking/preliminary disinfection, cleaning, disinfection) must be

used to disinfect vehicles. A high-pressure cleaner should only be used if the dirt is very stubborn. The vehicle is cleaned using a water hose and then sprayed with disinfectant and the exposure time is waited for. If available, use foaming equipment. The foam slowly slides off and reaches the required exposure time. In principle, occupational safety must be observed when using cleaning and disinfectant agents.

5.7 Carcasses and by-products

Animal carcasses or parts thereof or contaminated animal products must be stored, transported and disposed of in such a way that contact with and the spread of biological substances is avoided (e.g. in sufficiently stable bags and for transport in sealable, labelled containers), see also §§ 7, 9 and 10 of the By-Products Disposal Act. Large animal carcasses may only be transported on the VMF site in the stainless-steel tub. A cover with a tarpaulin as a visual screen must be provided. The disposal of cadavers and animal by-products occurs via the Institute of Veterinary Pathology (for details see chapter 10).

5.8 Protective clothing and PPE

Work clothing (e.g. smocks, trousers, overalls, etc.) is required in areas where the clothing of employees and trainees can become contaminated with pathogens. The work clothing of those at risk must be changed as needed, but at least once a week, and that of students as needed. PPE of employees and trainees is generally to be regarded as contaminated and may only be washed and disinfected centrally in the VMF laundry. Students should be provided with facility-specific sectoral clothing. In areas where the sectoral clothing is likely to become damp, additional work clothing and PPE is required (rubber boots or disposable overshoes, rubber or plastic apron, face mask, gloves and head protection). The PPE must be disposed of or disinfected after use.

Wearing watches, chains, rings or similar jewelry is not permitted in areas with a particular risk of infection. In areas with certain infection risks (e.g. droplet or aerosol infection), respiratory protection with a class P2 particle protection filter should be worn. If the mask becomes damp, it must be changed after 3 to 4 hours at the latest. PPE must be stored separately from other clothing. Employees and trainees must remove any PPE they are wearing before entering workrooms, lecture halls, dining rooms or when leaving areas at risk of infection. Employees and trainees are not permitted to wear the same protective clothing in different areas at risk of infection.

Depending on the activity and hazard and the potential route of infection, additional personal protective equipment (PPE) may be required. The PPE must be selected based on the result of the risk assessment. PPE includes:

- Protective gown, if necessary, with cuffs and/or hood,
- liquid-tight disposable protective suits,
- unpowdered and low-allergen medical gloves with an Accepted Quality Level (AQL) of ≤ 1.5 for possible contact with body fluids and excretions, opening or rinsing of abscesses, infected wounds,
- liquid-tight aprons/gowns, e.g. for obstetrics or for the removal of afterbirth,
- liquid-tight footwear such as rubber boots or disposable shoe covers
- particle filtering respiratory masks (FFP) of classes 2 or 3 (e.g. in case of high
- dust pollution or airborne zoonotic pathogens)
- Eye or face protection if splashing or spraying of infectious materials or liquids or absorption of biological agents through mucous membranes is to be expected (e.g. when opening body cavities).

5.9 Sterilization area

When work begins, all work and storage surfaces are cleaned daily with Meliseptol pure and disposable wipes. Instruments and surgical instruments are placed in an ultrasonic bath with Stammopur DR 8-1% for 5 minutes. They are then rinsed with clean water. The next step is cleaning in the Miele PG8582CD washer-disinfector with MediClean forte and Septo DN. After cleaning, the surgical instruments are checked, packaged and sterilized at 134°celscius. Endoscopes are pre-cleaned by hand with neodischer Midi Clean forte ® 0.5% and then cleaned in the WD 430 cleaning and disinfection device for flexible endoscopes with Medi Clean forte and Selo DN.

5.10 General Work Processes

5.10.1 Responsibilities

Responsible person	Responsibilities
Hospital management	Task allocation, control, determinations
Hygiene officer	Creation and updating of hygiene plan and relevant documents
Trained employees (veterinarians, animal keepers, service staff, student assistants (brakemen))	Implementation and compliance with this hygiene plan. Completion of the associated documentation.
Cleaning company	Cleaning and floor disinfection as required
Laundry service	Carrying out chemical-thermal cleaning

5.10.2 Patient admission / intake of ruminants

Before admission, the animal owners or veterinarians register by telephone. During this telephone call, the disease status of the farm is queried and, based on the medical history, it is determined whether the animal in question is suffering from an infectious disease. Animals from areas subject to disease control regulations are not accepted at the clinic. Animals that are accepted for admission to the clinic after the first admission interview are either picked up from the farm by the clinic's own transport or brought by the owner.

5.10.3 Hospital's own transport

The clinic's own transporter only ever loads animals from one farm. After each transport, the truck is cleaned and disinfected inside and out using a high-pressure cleaner.

5.10.4 Acceptance at the clinic

If the general condition of the animal allows, all ruminants are admitted to an admission area separate from the main barn. This is specially secured and allows easy cleaning and disinfection. This is where the initial examination is carried out and based on this it is decided which barn area the respective animals will be taken to. In the case of animals that are lying down, an initial assessment is carried out on the transporter before they are taken to a box if possible. Small ruminants, New World camelids and cattle are housed in separate rooms. If available, animals are housed separately for each farm (separate box units per farm). After an initial assessment of the state of illness, a decision is made as to whether the animal needs to be kept in isolation. This is located directly opposite the admission station and has a black and white lock with a separate sewage system. Calves are placed in a newborn unit. If an infectious and contagious disease is suspected, particularly with zoonotic potential (e.g. calf diarrhea), then isolation is available within the newborn unit.

All animals admitted receive a paper file on the day of admission, in which the admitting veterinarian must indicate whether there is a suspicion of a notifiable disease (e.g. foot and mouth

disease). In addition, blood is taken from each animal and stored in case diagnostic tests are necessary. On the day of admission, admitted animals are given halters, which remain on the patient until they are removed from the stable. During their stay, the animals are clinically examined daily as part of a visit. Of course, they are provided with animal care such as food and water, milked if necessary, and mucked out regularly. Drug treatment is carried out using disposable syringes and cannulas.

If the stay is longer, the box may be cleaned in between if necessary. During the stay, the animal remains in one box if possible. Moving the animal should be avoided. A daily record is made of which animal is in which box.

5.10.5 Dismissal

Before the animal is discharged, a final examination of the animal is carried out and a final blood sample is taken. This blood is then stored in case any diagnostic tests for infections are required.

5.10.6 Outpatient Clinic

Every day, 2-3 teams travel to 2 or 3 farms. The cars used are owned by the faculty and are allocated as specifically as possible to each farm (the same car goes to the same farm every day). Veterinarians and students wear street clothes on the way to the farms, which they change into their own underwear (not used in the clinic) on the farms. They wear company-owned overalls and boots on the farms. The cars are parked on the farms outside the animal-keeping area (in the black area) if possible. The aim is to use company-owned material on the farm (halters, obstetric instruments, clippers, hoof knives, etc.). After work on the farms has been completed, the boots are cleaned and disinfected. The overalls are washed regularly on site.

5.10.7 Hygiene Plan

The aim of the hygiene plan is to prevent the transmission of biological substances, i.e. infectious agents (viruses, bacteria, fungi, parasites) as far as possible. The transmission from animal to employee, animal to animal and to third parties, including indirectly via surfaces and objects, must be kept as low as possible by the necessary measures. Suitable cleaning, disinfection and sterilization measures are therefore determined and regulations for supply and disposal are made. This is also intended to limit the spread of allergenic biological substances, as well as other allergenic organic substances (hair, skin particles, etc.) or toxic components. For special requirements for cleaning and disinfection, see the annex.

5.10.8 Disposal

The biological agents of risk group 2 are safely collected in suitable containers and subjected to physical processes that are proven to be effective for pathogen-specific inactivation and disposal. For this purpose and for the internal transport of biological agents in risk group 2, this takes place in tightly sealed, marked containers that are protected against breakage and disinfected in the event of external contamination. All other waste is treated and disposed of like household waste.

5.10.9 Training and instruction

The aforementioned biosafety procedures are taught in the QM training program of the clawed animal clinic. Hygiene and specialist training is carried out regularly for all employees on the basis of the applicable legal basis. All employees are regularly instructed on the contents of this hygiene plan. Once a year, the clinic director conducts a documented safety briefing in accordance with BiostoffV, TRBA 260.

6 Chapter Department for Horses

6.1 General comments

It is essential for all students, clinicians and staff to be familiar with the basics of hygiene, personal protection and general infection control guidelines as outlined in this biosafety and biosecurity handbook. All persons working in the Department for Horses are responsible for maintaining cleanliness in the facility and for addressing problems with hygiene or biosafety they witness. Questions and problems should be addressed to Laura Krause (veterinary assistant), Prof. Katharina Lohmann or Prof. Walter Brehm.

6.1.1 Food and beverages

Food may only be stored in the dedicated student and staff break rooms and in the staff offices. Drinks may be stored in the staff office (surgical/orthopedic section) or on the tray cart in the clinic office (internal medicine/reproductive medicine section). Eating and drinking in the patient housing areas as well as storage of food and drinks in the clinic refrigerators and freezers is strictly forbidden.

6.1.2 Handling and reporting accidents

Injuries or accidents must be reported immediately to an attending veterinarian or technical staff and recorded in the accident book. The book is located in the clinic office in building 21a.

Accidents that result in a visit to the doctor or hospital must be reported to the Office for Environmental Protection and Occupational Safety by means of an accident report (BfUA homepage). Students must also report accidents to the Office of Student Affairs. First responders in the Department for Horses is Mrs. Ulrike Schröter.

6.2 General attire for working in the Department for Horses

Attire to be worn by all staff and students includes clean, weather-proof clothing, safety footwear or, if needed, rubber boots and a clean, white lab coat (e.g., students on clinical rotations in the internal medicine/reproductive medicine section). Staff should wear work clothes provided by the department. Clothing has to be suitable for working with horses. Work attire is not to be worn in public areas of the VMF including the cafeteria, and on the way to and from work. This serves to limit the exposure of people or other animals, and decreases the risk of carrying infectious pathogens home. Work clothes including lab coats and shoes/boots must be kept clean and should be changed and cleaned and/or disinfected when contaminated.

Additional PPE must be worn in areas with an increased risk of infection to people or animals; this includes the operating rooms, isolation stalls and stalls for patients with increased hygiene measures.

6.2.1 Surgical attire

Attire to be worn in the operating room includes scrubs and rubber boots for all persons directly involved with an operation and for all other persons if so instructed by the surgeon or technical staff. Surgical attire is not to be worn outside of the operating room.

6.2.2 Attire for isolated patients/barrier precautions

Patients with known or suspected infectious diseases are handled with barrier precautions, which usually include a disposable gown, gloves, boot covers or rubber boots and cap/hair cover. Regular working clothes such as lab coats or jackets must be removed prior to donning barrier precautions (also see section 6.7.2. and 6.7.3.).

6.2.3 Cleaning of working attire

Non-contaminated working clothes can be washed and dried in the washing machines in building 21a. Use Ecolab Eltra 40 Extra for a disinfecting laundry detergent. Surgical attire and surgical towels and cover sheets are placed in the black bin at the entrance to building 21a and washed in the central laundry facility (pick-up and return on Tuesdays). Non-contaminated footwear can be cleaned using water and regular soap. Contaminated footwear must be disinfected prior to cleaning and again afterwards. Wipeable attire such as radiology gowns, rubber boots and boot covers can be cleaned and disinfected using Meliseptol® disinfecting wipes. Disposable attire such as surgical gowns are disposed of in the trash bins after use.

6.3 General patient hygiene

Patients of the department for horses are housed in the surgical/orthopedic section, the internal medicine/reproductive medicine section, the outside barn ("Außenstall"), the dung barn ("Misthaus") or the isolation unit in building 11a. Stalls are cleaned and, ideally, disinfected before introduction of a new patient. During hospitalization of a patient, stalls are cleaned once daily as a minimum (usually twice daily). Hallways, barn aisles and treatment areas are cleaned and disinfected on a daily basis or as needed. The cleaning and disinfecting cycle is increased is case of high contamination load. Equipment (buckets, halters, lead ropes, nose twitches etc.) are used only for individual patients, are regularly cleaned during the hospitalization of an animal and cleaned and disinfected after an animal leaves the hospital. Patients should be groomed daily.

Area or item	Cleaning	Disinfection
Stalls and floors	FloorPro Grundreiniger RM 69 Calgonit NF 422 FadoStar Handspülmittel	Wofasteril 0.6-0.7% Ca. 30 min contact
Recovery stalls		Melsept 0.5% (100 ml = 5 pumps/20L water)
Twitches		Helipur 1.5% (300 ml/20L water)
Muzzles		Helipur 1.5% At least 15 min contact
Grooming supplies		Helipur 1.5% (375 ml/25 L water)
Horse blankets, face masks		Ecolab Eltra 40 Extra (300 g = 2 cups)
Halters and lead ropes		Ecolab Eltra 40 Extra

6.4 General cleanliness and hygiene

Maintaining hospital cleanliness and appropriate personal hygiene are responsibilities of all staff and students working in the Department for Horses.

6.4.1 Handwashing and disinfection

Hands must be washed and/or disinfected with an alcohol-based hand sanitizer prior to and after handling each patient. Use hand disinfection for visibly clean hands. Wash and disinfect hands that are visibly dirty. Clean disposable examination gloves should be worn when handling high-risk and highly susceptible (i.e., immunocompromised) patients, when handling i.v. catheters or in case of contact with feces, excretions, secretions, discharges or wounds. Hands must be disinfected after removal of gloves. Use hand cream to prevent skin from cracking.

Handwashing: Lifasano® hand-washing liquid, Softaskin, dry hands thoroughly

Hand disinfection: Sterillium® (at least 3 ml applied to dry hands, rub hands for at least 30 sec, keep hands moist for the entire time, reach all areas including finger tips and between fingers, see figure 1)

Fig 1.: Sketch of the correct hand disinfection regimen.

6.4.2 Surgical hand disinfection

Surgical hand disinfection serves the purpose of removing as much as possible of the resident skin flora of hands and lower arms, it therefore requires more extensive cleaning measures. Preparation: remove all jewelry from hands and arms

Washing: thorough washing of hands and lower arms with Lifasano® handwashing liquid (see above), at least 1 minute in all areas, use scrub brush to clean finger nails (if needed).

Thorough drying of hands and arms using a sterile towel.

Disinfection: thorough disinfection of hands and lower arms using Sterillium® (see above), rub hands and arms for at least 3 min, keep hands/arms moist for the entire time, see figure 2)

Fig 2.: Sketch of the correct surgical hand disinfection regimen.

6.4.3 General cleaning and disinfection

Surfaces and equipment

Aside from daily routine cleaning, all surfaces and equipment need to be cleaned and disinfected between patients. This is the responsibility of everyone involved in patient care!
Clinicians' and students' own equipment including scissors, thermometer, stethoscope and penlight should be routinely cleaned and disinfected.
If using a bucket for collecting reflux, urine etc., place a plastic liner bag into the bucket prior to use to minimize soiling and contamination. Do not use horses' feed and water buckets or tubs to collect bodily fluids or manure.
Cleaning: dishwashing liquid or other appropriate household soap
Disinfecting wipes: Meliseptol® disinfecting wipes (wear gloves)
All instruments, equipment and other objects including stomach tubes, mouth speculums, endoscopes, grooming tools, clipper blades, etc. must be cleaned and sterilized or disinfected between uses. A manual of procedures is available in each section of the department.

Floors (including stalls)

Floors are cleaned routinely and as needed after use. This is the responsibility of everyone involved in patient care! Manure, shavings, feed and other bulky dirt must be picked up and disposed of in the manure bins or trash bins. Gross dirt is removed using water and regular cleaning agents.

Stalls are disinfected between patients whenever possible; this is usually done by animal attendants. In emergency situations, stalls may need to be cleaned and disinfected by student assistants.

Cleaning: FloorPro Grundreiniger RM 69, calgonit NF 422, FadoStar Handspülmittel

Disinfection:

- Wofasept FL: 3% = 240 ml per 8 l cold water, 30 min contact time
- Wofasteril SC super (1:1 mit Alcapur) – 0.6-0.7%, 30 min contact time

6.5 Walking patients outside

Manure of patients walked outside must be picked up as soon as possible and disposed of in the manure containers at the back of each patient housing area.

6.6 General guidelines for the admission and treatment of patients

Horses with no suspicion of contagious disease are admitted to the examination rooms or directly into a stall in the respective patient housing area. Outpatients should be taken into the patient housing areas as little as possible. For hospitalized patients, equipment such as halters and lead ropes, blankets and travel boots should be returned to the owner to prevent loss, damage and contamination. All equipment and feed belonging to a patient owner, which remains in the Department for Horses, must be labeled clearly. Patients should receive a mane tag with their Vetera ID number and name, a bag with individual grooming supplies, an individual halter and lead rope as well as a water bucket. For hospitalized patients, treatment sheets are affixed to the stall in a closed plastic cover; the main record remains in the section office.

Patients with suspicion of contagious disease must not be accepted without clarification whether the patient can be admitted (see below), and should be admitted directly into isolation. If there is doubt about the status of a patient, the responsible senior clinician or, if he/she is not available, Prof. Lohmann or Prof. Brehm should be consulted as soon as possible. It is very important to take a thorough history as historical information must be used to decide on admission of patients.

Occupied stalls are cleaned at least once, but usually twice daily by animal attendants and re-bedded as needed. Shavings used must be recorded for billing purposes. Students, student assistants, technical staff and clinicians may need to clean and bed stalls in circumstances where animal attendants are not available or where access to a patient is restricted for biosafety reasons.

Prior to discharge, animal owners must be informed of potential infectious hazards and provided appropriate recommendations for isolation and hygiene measures at home. The anticipated time and date of discharge should be noted on the whiteboard and communicated to the animal attendants in order to optimize patient hygiene and avoid unnecessary stall cleaning and bedding prior to discharge. When the patient is discharged, all equipment (halters, lead ropes, buckets etc.) must be removed from the stall and placed in the appropriate areas for cleaning.

6.7 Management of patients with diagnosis or suspicion of contagious disease

Special precautions are required when managing patients known or suspected to be infected with contagious pathogens. The primary aim is to avoid direct and indirect contact between the patient and other patients, and to avoid transmission of zoonotic organisms to people. Isolation of patients is based on clinical signs; the following are examples that should lead to isolation of a patient:

- acute diarrhea
- acute respiratory disease, especially if febrile
- acute neurologic disease (see below for EHV-1)

- fever of unknown cause

Patients may also need to be isolated based on clinical signs that develop while in the clinic or based on (unsuspected) identification of specific pathogens (e.g., *Streptococcus equi subsp. equi*, equine herpesviruses, multidrug-resistant bacteria).

6.7.1 Admission of patients

As much as possible, patients known or suspected to be infected with contagious pathogens are admitted directly into isolation. If examination in the examination room is unavoidable for safety reasons, the examination room must be emptied as much as possible (to facilitate cleaning and disinfection), the horse must be moved to and from the examination room without walking through the regular patient areas and the examination must be performed with strict barrier precautions. Any manure passed on the way into the examination room must be picked up and disposed of immediately. Following the examination, the room and all equipment in it must be thoroughly cleaned and disinfected.

Horses must not be accepted into the clinic if:

- there is no room to isolate them properly
- they are known to suffer from clinical disease caused by EHV-1 infection (EHM = equine herpesvirus myeloencephalopathy; abortion due to EHV-1)
- they have clinical signs that highly suggest disease caused by EHV-1 (acute neurologic disease with clinical signs such as fever, hind end weakness or ataxia, tail paralysis, bladder paralysis, problems defecating; acute febrile neurologic disease affecting multiple horses; late-term abortion with no premonitory clinical signs) and EHV-1 infection has not been ruled out
- they are known to be infected with the equine infectious anemia (EIA) virus
- they have clinical signs compatible with EIA (e.g., recurrent fever, edema, weight loss, anemia, thrombocytopenia) and EIA has not been ruled out by diagnostic testing (ELISA or Coggins test).

6.7.2 Discharging horses out of isolation

As much as possible, horses kept in isolation should be sent home directly out of isolation and should not return to the regular patient housing area. Exceptions must be authorized by a senior clinician and should be based on clinical recovery coupled with diagnostic testing to rule out contagious disease (e.g., 3-5 fecal samples negative for Salmonella spp.; repeated nasal swabs PCR-negative for EHV; guttural pouch lavage fluid PCR-negative for *Strep. equi equi*).

6.7.3 Handling horses in isolation

The primary aim of isolating horses is to avoid direct and indirect contact between the patient and other patients, and to avoid transmission of zoonotic organisms to people. It is everyone's responsibility to keep isolation clean and tidy. Cell phones must not be used in isolation.

The cartoon below shows the layout of the entryway into the isolation unit (hygiene lock, A - C); all persons entering isolation must use this route (red arrows). Horses enter isolation through the large double-doors next to the hygiene lock (area D, black arrows) and are handed to another person in full isolation gear in area C. In many, but not all cases, area D remains "clean" and can be entered directly from the outside (barn area) to bring fresh feed and bedding for a patient in isolation (black arrows). Feed and bedding are then positioned at the door between areas D and C and can be received by a person in full isolation gear from area C. There

must be no direct contact between these persons! Persons in full isolation gear must not enter area D; if they do, area D is contaminated and must no longer be entered from the outside!
A senior clinician must determine whether entering area D from the outside is permitted in principle. Anyone contaminating area D must immediately label the large double-door to prevent others from entering area D from the outside.

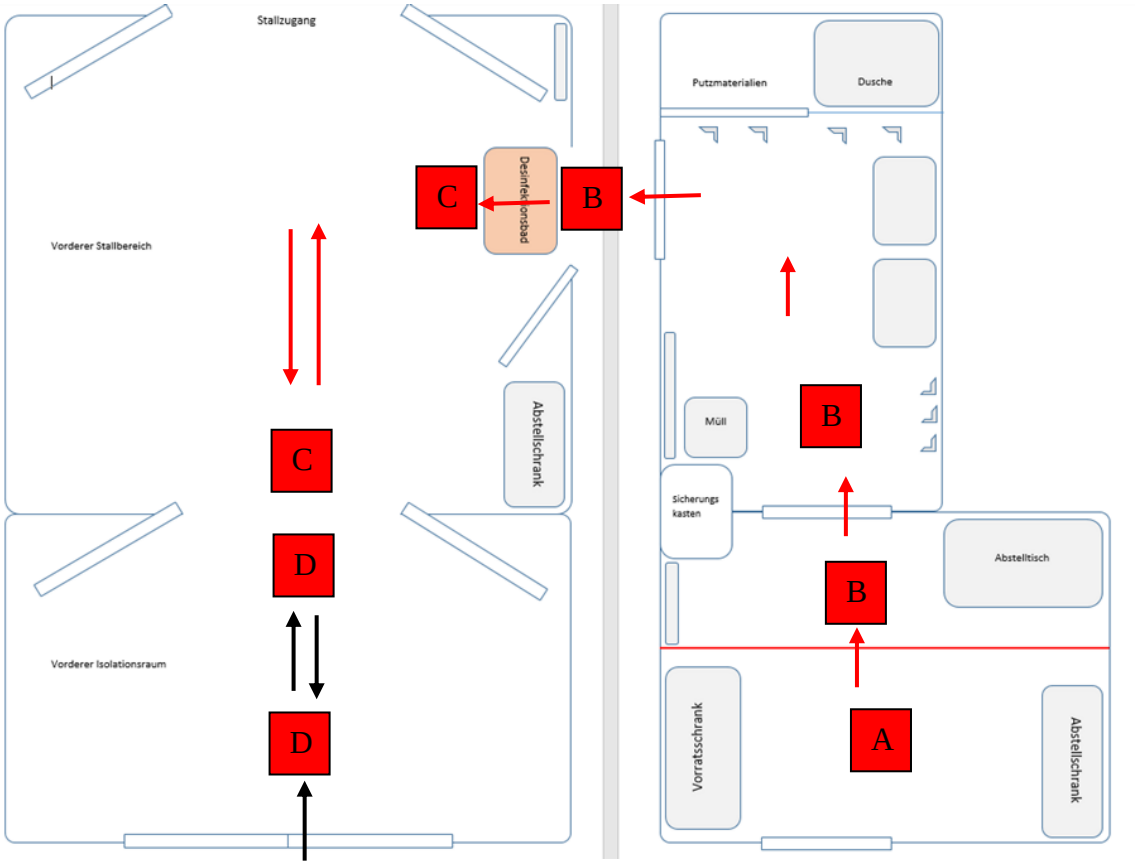


Fig.3: Outline of handling horses in isolation.

<u>Minimizing materials</u>

Only equipment required for the care of an isolated patient must be brought into isolation and stored in the isolation cabinets. Do not bring extra supplies “just in case” as this creates unnecessary waste and costs! As a general rule, all equipment that enters isolation stays there until the patient leaves and the equipment can either be cleaned and disinfected or is disposed of. This includes personal items such as pens, thermometers, stethoscopes and lab coats. Patient records must not enter isolation.
Because of the above, clinicians and students need to plan ahead when entering isolation and need to be aware of the contents of the cabinets in isolation. The “Vorratsschrank” in area A is used for clean storage and must be kept clean at all times. If you forget to bring anything you need into isolation, you need to completely take off PPE, clean and disinfect hands, get your supplies and completely put on the isolation PPE again!
Each patient in isolation needs to have his own equipment in terms of halter and lead rope, muzzle and twitch (if needed), buckets, feed bins and grooming supplies. Equipment needs to be supplied as soon as the patient is in isolation. Stethoscopes, thermometers, buckets and haynets used in isolation remain there and are cleaned and disinfected between patients. Halters, lead ropes, muzzles and twitches should also remain in isolation. If they need to be removed for cleaning, they need to be disinfected prior to leaving isolation.

PPE

Minimum PPE for isolation includes rubber boots, disposable gowns, gloves and a cap/hair cover. In some cases, additional scrubs need to be worn under the disposable gown. Strictly follow the procedure for donning and doffing PPE correctly:

Donning PPE:

Area A:

1. In area A, remove all unnecessary work clothing (lab coats, jackets etc.) and leave personal items such as thermometers and stethoscopes on the “Abstellschrank”.
2. Put on a new clean disposable gown and cap (in the “Vorratsschrank”) and gloves.
3. When re-using gowns, put on gloves in area A only.
4. At the bench between area A and area B, remove your shoes (leave in area A) and step into rubber clogs in area B. Rubber clogs must not enter area A.

Area B:

5. If necessary, put on a gown and cap located in area B. Walk to the footbath located between areas B and C. Place rubber boots (either clean ones from the “Putzmaterialien” room/shower area or dirty ones already in area C) into the disinfecting footbath.
6. Step into the rubber boots, leaving rubber clogs in area B.

Area C:

7. Enter area C.

Doffing PPE:

Area C:

1. Clean rubber boots using the hose. Step into the disinfecting footbath.
2. Remove boots and step into rubber clogs in area B.
3. Place boots back into area C.

Area B:

4. Remove cap, gown and gloves without contaminating your body. Visibly dirty or torn gowns must be disposed of. Depending on the patient situation, clean and intact gowns can be re-used.
5. Hang gowns to be re-used on individual hooks, do not hang gowns on top of one another!
6. Wash and disinfect hands thoroughly.
7. At the bench between areas B and A, remove clogs and step into your own shoes in area A. Leave clogs in area B.

Area A:

8. Collect your personal items and put on work clothes.
9. Disinfect hands again when leaving isolation.

Feeding

Horses in isolation may need to be fed by clinicians and students to minimize the number of people entering isolation. See above for supplying feed through area D.

Do not bring too many feed bins or buckets into isolation! Place a feed bin at the door between area D and C and pour feed into it without touching it. Alternatively, place feed in rectal exam gloves or plastic bags that can be thrown out after use.

Equipment

Any equipment leaving isolation must be thoroughly cleaned and disinfected. For larger equipment such as ultrasounds or endoscopy towers, cleaning and disinfection should take place in area C, with another disinfection in area D before leaving isolation.

Cleaning and disinfection

It is everyone's responsibility to keep isolation clean and tidy. This includes keeping all equipment inside the cabinets, cleaning surfaces and equipment after each use, disposing of trash into the trash bins, sweeping the floors, hanging up halters, wiping the wash basins etc.
The entire isolation area (stalls, anteroom, cabinets, hygiene lock) must be thoroughly cleaned and disinfected after the patient leaves. Consult senior clinicians or Prof. Lohmann on cleaning procedures if you are unsure of the patient's disease status. As the isolation area is still contaminated after the patient leaves, all cleaning and disinfection must be done wearing PPE.
Cleaning: FloorPro Grundreiniger RM 69, calgonit NF 422, FadoStar Handspülmittel
Disinfection of stalls and floors (areas C and D): Wofasteril SC super (1:1 mit Alcapur) – 0.2-0.4%, 30 min contact time
Surfaces and all equipment are disinfected with Meliseptol® Foam Pure or Meliseptol® wipes.

6.7.4 Use of barrier precautions (PPE) in other areas of the hospital

Some patients in the regular patient area may need to be handled with barrier precautions; these include immune-compromised patients such as neonatal foals, patients with open wounds and patients with fever, changed fecal consistency or other symptoms that cannot be moved to isolation. Barrier precautions usually include a gown, gloves and shoe covers or rubber boots. These need to be stored within a taped-off area in front of the stall and donned after removing outer wear such as lab coats or jackets. There needs to be a strict separation between the "clean" barn aisle and the taped-off area, which must only be entered with barrier precautions. A footbath or disinfecting mat must be placed at the boundary of the taped-off area.

6.8 Transportation of samples

Blood samples are transported to the large animal laboratory in racks. Blood vials must be clean and labeled with the patient number and accompanied by the appropriate laboratory request. For horses with repeated laboratory investigation, existing results sheets should be taken to the laboratory to save on paper.

Samples for other laboratories on campus (Institute of Bacteriology and Mycology, Institute of Virology, Institute of Parasitology, Institute of Pathology etc.) are transported according to transport regulations for category B biological materials (UN 3373):

- Leak-proof primary receptacle (e.g. sample container)
- Sufficient absorbent material to soak up all of the liquid in the primary receptacle, should a spill occur during transport
- Leak-proof secondary container (e.g. plastic bucket) with lid. This contained must be clean on the outside.
- When placing more than one primary receptacle into a secondary container, the primary receptacles must be individually wrapped or separated by absorbent material to prevent contact

6.9 Waste disposal

6.9.1 Separation of wastes

Waste for disposal must be separated into paper, documents, plastics, glass, sharps and regular waste. Paper, plastics and glass is collected in labeled containers/boxes in the pharmacies and disposed of in the collection containers on campus. Documents and all papers with identifying patient or owner information must be disposed of in the silver document collection bins (see below). Regular trash is disposed of in trash bins distributed across the clinic.

6.9.2 Sharps

Examples: single use needles, needles (without thread), scalpel blades, glass vials, slides, cover slips

Instructions: Use single-use gloves when picking up sharps. Do not re-cap needles. Use cotton swabs for protection to break open glass vials. Dispose into sharps containers (see image), do not overfill containers. Do not use containers for disposal of non-sharps. Notify technical staff if containers are full.

6.9.3 Unused/expired medications

Unused or expired medications are removed from the pharmacy, collected and stored until they can be removed by the "Büro für Umweltschutz und Arbeitssicherheit". Please notify technical staff or attending veterinarians immediately if you notice any expired medications.
Smaller amounts can be disposed of in the regular waste bins. Use paper towels or swabs to soak up liquids, do not dispose of full bottles! Narcotics must be disposed of in the presence of 2 witnesses and disposal documented, please notify technical staff or attending veterinarians.
Tablets (with or without blister packaging) must be packaged in a closed plastic bag prior to disposal and must be hidden among other trash to avoid removal. Empty oral paste applicators are disposed of whole.

6.9.4 Blood, bodily fluids, tissues

Small amounts of non-infectious materials can be disposed of in the regular trash, soak up fluids first. Tissues, organs and body parts are disposed of via the Institute of Pathology (see 6.9.5.).

6.9.5 Cadavers

If possible, horses are euthanized in the recovery stalls in building 21a to allow for easier pick-up and transportation. If unavoidable, horses are euthanized in stalls. Cadavers must be transported to the Institute of Pathology as soon as possible after euthanasia or death and accompanied by the appropriate paperwork for necropsy or disposal. Cadavers are transported in using a forklift with a mounted stainless-steel tub; only use the forklift if you have received proper training! Cover cadavers with a tarp and make sure the entire cadaver is within the tub to avoid escape of any fluids during transport. Follow the Institute of Pathology's instructions for moving cadavers into the cold storage area. Clean and disinfect stapler wheels and tub prior to returning to the clinic.

6.9.6 Feed, bedding, manure

Left-over feed, used bedding and manure is disposed of in the manure bins at the east end of the clinic building. Shavings are disposed of in a separate container at the east end of building 21a. Use the forklift with mounted tub or a wheelbarrow for transportation. Only use the forklift if you have received proper training! Do not use clean wheelbarrows for fresh feed/straw for the transportation of used feed, bedding or manure.
Manure bins and shavings bins are collected approx. weekly by the LFG Oberholz.

6.9.7 Hygiene concept for student exercises

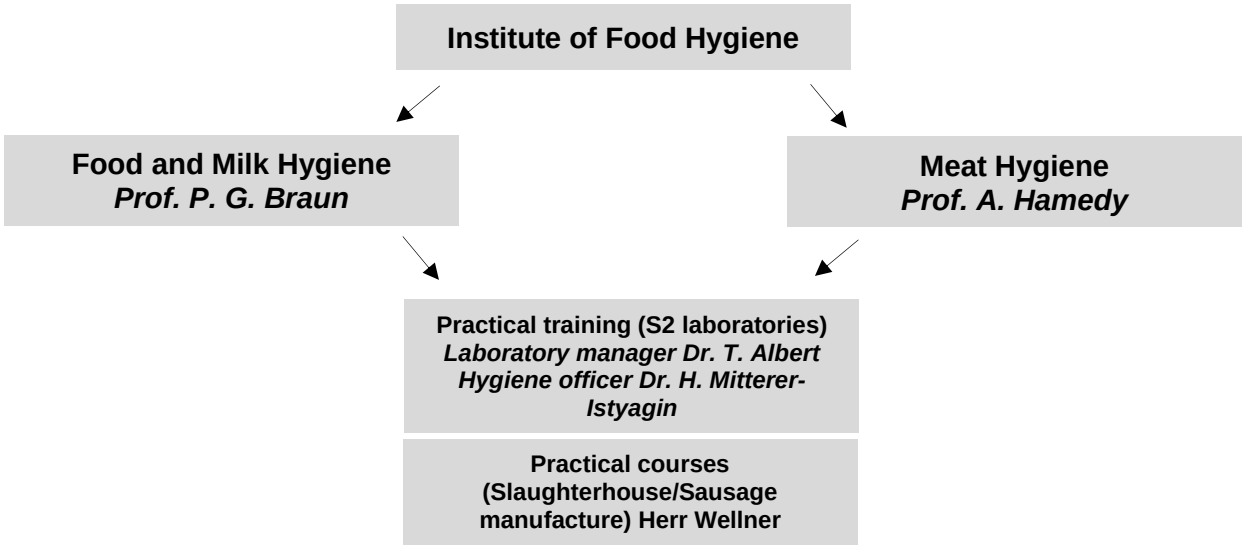
Students must observe general hygiene measures during all practical exercises in the Department for Horses. These include the clinical rotation I ("small clinical rotation"), the clinical examination course ("Propaedeutics"), the clinical demonstrations, the elective equine track and the clinical rotation II during the clinical-practical senior year. General hygiene measures include:

- For everyone’s personal safety, students are reminded of the use of social distancing, hand hygiene, use of masks and ventilation. Students with acute symptomatic respiratory diseases should stay home and consult a doctor.
- Students must wear clean protective clothing (white lab coats) and safety footwear, and bring all necessary equipment such as stethoscopes, percussion hammers and plessimeters.
- Lab coats worn in practical exercises in other clinical departments or institutes must be washed prior to use in the Department for Horses.
- Prior to each exercise, between animals and after each exercise, students must wash and disinfect hands.
- Students must follow all instructions, which may include instructions for putting on additional protection such as gloves.
- Pregnant or nursing students must report to the Office of Student Affairs. A risk assessment is available for each practical exercise, which outlines whether pregnant or nursing students can attend.

7 Chapter Food Sciences

7.1 Food Hygiene

Organigram and responsibilities – Institute of Food Hygiene



Floor plans to enter the facilities

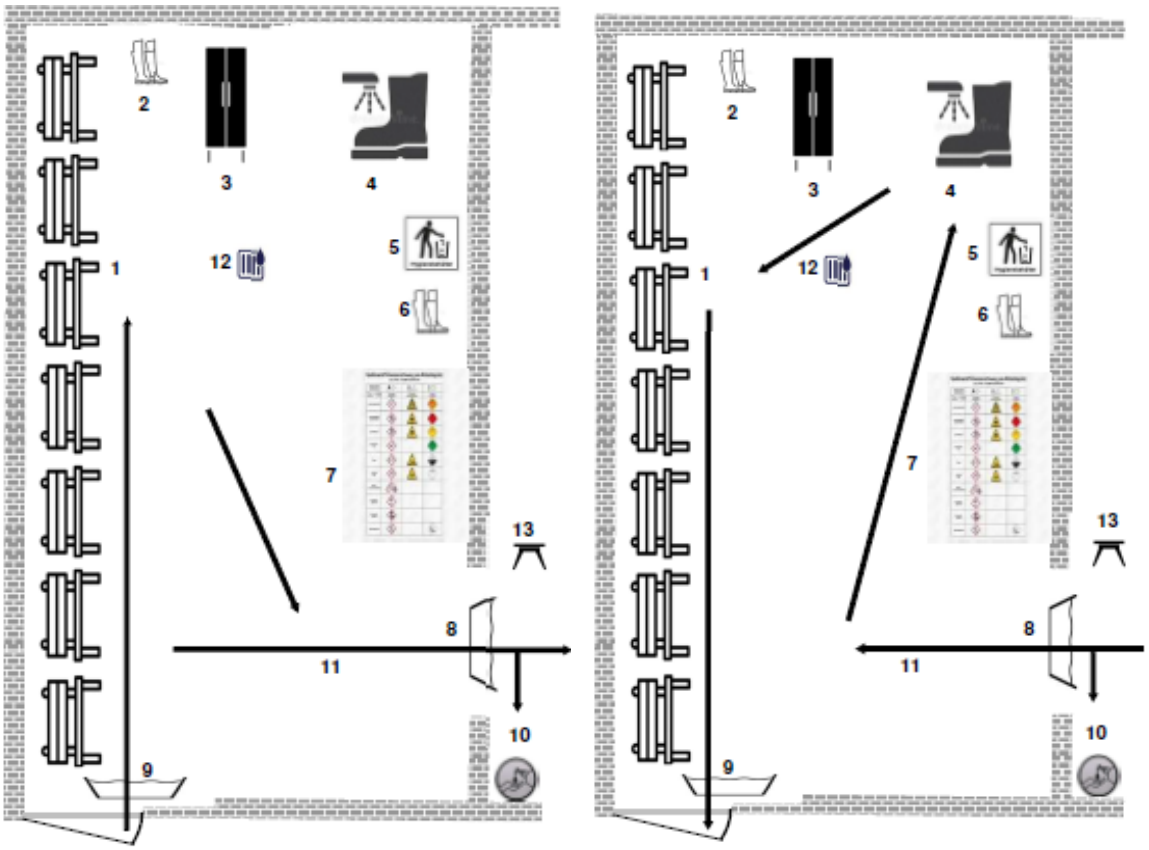


Fig.1: left: entering the hygiene sluice and slaughterhouse, right: exiting the slaughterhouse and hygiene sluice

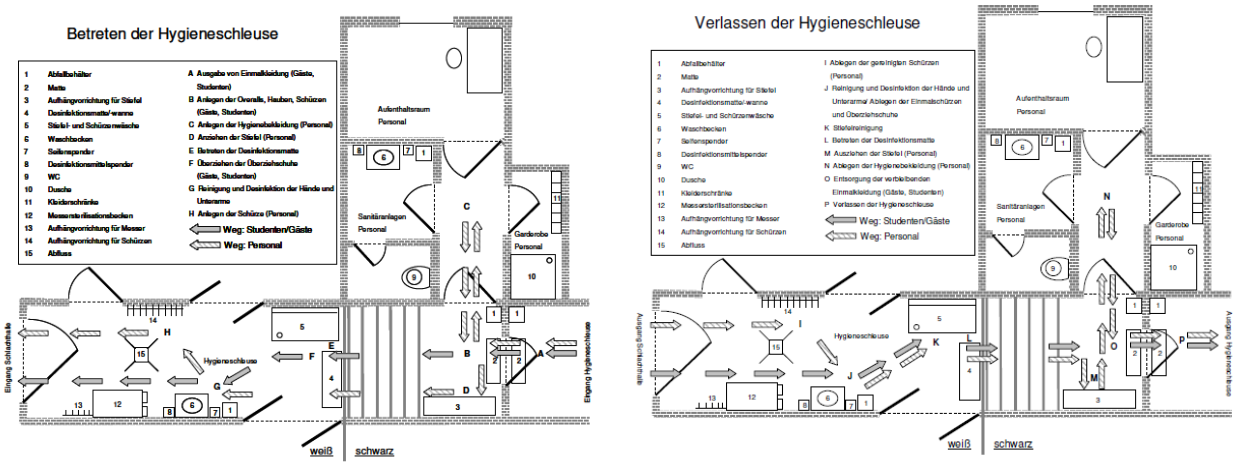


Fig. 2: left: entering the sausage manufacture, right: exiting the sausage manufacture

7.1.1 Requirements for personnel, students and visitors

All guidelines are summarized in the (*Geschäftsordnung und Hygieneordnung des Instituts für Lebensmittelhygiene,* ***GHO***), which also describes the hygiene standards. In addition to the generally applicable regulations for laboratories (see chapter 2), specific instructions for students/staff/guests are listed below.

7.1.2 Type of activities

<u>teaching:</u>

- Food and milk hygiene courses in the course room (8th semester)
- practical training (9th/10th semester)

7.1.3 Access restrictions

Unauthorized persons are generally not allowed to enter the laboratories. The areas with access restrictions (transponders, individually programmed) are clearly marked with signs. Depending on the biohazard risk, different rules of conduct and access restrictions may apply (signs S2 laboratories). Before entering the laboratories, visitors, technicians and service personnel are informed about the existing risks and the applicable behavioral measures. See instructions for cleaning staff, instruction protocol (FB 42 *instruction protocol for new employees* and FB 03 *instruction protocol for interns and externals*). The exact provisions are set out in the operating instructions and laboratory regulations, see (point 2.2 *Access regulations) of the* Hygiene regulations of the institute of food hygiene (GHO) The provisions of the GHO apply also to the approved meat processing unit (‘Leipziger Wurstmanufaktur’ – sausage manufacture) and the Slaughterhouse incorporated in the Institute of Food Hygiene.

7.1.4 Instructions / training

Before starting work, students and staff are given safety training by the responsible laboratory employee on the specific biohazards, as well as on the handling of biohazardous substances and the general rules of conduct in the laboratories, including the valid procedures for entering and leaving the laboratory unit. Used documents:

- FB 42 *Induction protocol for new employees*
- FB 03 *Induction protocol for interns and externals*

Instructions according to BioStoffV and TRBA 100, contained in the hygiene regulations of the Institute of food hygiene. Individual instruction including proof before starting the internship. Course regulations and instructions are given at the beginning of the food hygiene courses.

In addition, the staff, including doctoral students and student assistants, are regularly trained in the handling of biohazardous substances or are instructed on an ad hoc basis by project supervisor/laboratory manager. For that an annual training plan (FB 17) and compulsory training courses are conducted regularly. Description of the procedure: see annex: GHO point 1.3.1.7 and 1.3.1.10 The exact rules of conduct are set out in the operating instructions, laboratory regulations and hygiene plan within the hygiene regulations of the institute (see annex: GHO)

7.1.5 Personal protective equipment (PPE)

When working in the laboratory, appropriate PPC must be worn (see annex: GHO Point 2.5/Appendix 9 Requirements for occupational health and safety and working practices)
PPE is provided by the institute and a lab coat must be worn in all laboratories. Lockers are available to store bags/backpacks and street clothes. Used protective work clothing/laundry is collected in designated laundry baskets in the dishwashing laboratory and handed in weekly to the faculty's waste disposal building for cleaning. Coats used when working with biological agents in risk group 2 must be autoclaved before being handed in to the laundry. Street shoes must be replaced with footwear that is only worn in the laboratory. Eye protection and the wearing of protective gloves must be tailored to the expected hazards. The resistance information provided by the glove manufacturer must be observed.

7.1.6 Cleaning Disinfection

Surfaces are cleaned and disinfected before and after use (see annex: GHO 2.3 Laboratories, equipment and work materials). An overview of the cleaning of equipment and laboratory areas, inspection intervals for equipment and the type of documentation can be found in the brief instructions posted in the laboratories. These apply to all people working in the laboratory. Responsibilities (laboratory and equipment managers) have been assigned for each room, who are to monitor, organize and guarantee the cleaning of equipment and laboratory work surfaces. Annual plans for documentation are posted in the laboratories. Quick guides are posted in every laboratory.

After completion of the respective laboratory work, the laboratory tables must be disinfected and cleaned (see annex: GHO, Appendix 5). After work, the gas must be turned off, electrical systems and devices must be switched off and disconnected from the power supply. Devices or other work materials that are no longer required must be returned to their place (see also the rules of procedure). The laboratories must be locked.

The disinfectants used must be appropriate according to the pathogens used (see hygiene plans). If contaminated material is spilled or equipment is soiled, the affected area must be disinfected immediately and then thoroughly cleaned (see annex: GHO, Appendix 5). Dispensers are attached to the sinks for hygienic hand disinfection and hand washing. If contamination is suspected or the hands are contaminated with potentially infectious material, and generally after microbiological work (leaving the room), the hands must be thoroughly disinfected, taking into account the exposure time, and then cleaned with washing lotion (see annex: GHO, Appendix 5). Hand creams are available to protect the skin.

7.1.7 Disposal of material (infectious/non-infectious)

Disposal is also regulated in the Hygiene Regulations (see 2.7 Disposal). Infectious material is collected in autoclave bags. These must be disposed of in an autoclave bin/bag every day after work is completed. All materials to be disposed of or cleaned are collected in the laboratories in autoclave bags (autoclave barrel) and/or sealed plastic boxes (sorted by color according to laboratory) and transported to the cleaning laboratory as soon as possible by the laboratory staff and the doctoral students themselves. Trolleys are available if required. The

containers are cleaned and disinfected before being returned. Food, e.g. from courses or sample material from senders, examination material from doctoral students, etc. are disposed of by the animal carcass disposal facility (transport of the material in stainless steel buckets to the facility's own confiscated room or that of the Institute of Veterinary Pathology). Prior arrangement is essential for this! The containers are then cleaned and disinfected in the rinsing laboratory.

All inoculated culture media and materials containing biohazards (S2) are autoclaved (134 °C, 15 min) before their final disposal (garbage can, sewage system). Infectious glassware is autoclaved (134 °C, 15 min) before cleaning and hot air sterilization. Contaminated tools such as scissors, tweezers, knives, glass spatulas, etc. are disinfected in the laboratory (see annex: GHO, Appendix 5).

Contaminated disposable material is collected in autoclave bags and autoclaved (134 °C, 15 min) before final disposal via the garbage cans. Bacterial strains and other reference material to be disposed of are collected in autoclave bags, e.g. diagnostic sera, and autoclaved (134 °C, 15 min). The autoclaving process must be monitored and documented daily. The control printouts are made monthly and must be kept in the accreditation documents. Non-infectious material is disposed of according to category, based on the circular economy system.

7.1.8 Special features in the context of teaching (lecture halls, requirements for private protection clothing)

Details are listed in the course regulations - during the courses, a clean and white coat, which is used exclusively for the food and milk courses, must be worn. Hands must be washed before and after the course and as required (in accordance with GHO). Students who are pregnant are excluded from participating in certain courses. Affected students are asked to contact the institute management.

7.1.9 Hygiene plans as annex

- course regulations
- instruction protocols and hygiene regulations (Geschäfts- und Hygieneordnung (GHO))

7.2 Meat Hygiene

7.2.1 General requirements for personnel, students and visitors

personnel: At the start of the employment relationship, comprehensive hygiene instruction and training is provided, supplemented by an annual refresher course and an occupational health examination.

students: At the beginning of the meat hygiene course, students receive hygiene instructions and training, carried out by the staff of the institute of food hygiene, meat hygiene working group. Access to the slaughterhouse or food hygiene course room is only permitted when accompanied by staff.

externals (guests): Access to the slaughterhouse or food hygiene course room is only permitted when accompanied by staff and requires prior hygiene instruction by the staff of the institute of food hygiene, meat hygiene working group.

7.2.2 Type of activities

Teaching, 8th semester: meat hygiene courses in the slaughterhouse and in the food hygiene course room; courses for the training and further education of official investigation personnel

7.2.3 Activities in laboratory classes

slaughterhouse:

- carcasses and by-products of slaughter (partially unusable material)
- venison

Course room:

- working with bacterial pathogens/parasites of risk group 1
- meat samples for testing for parasites (dead Trichinella)
- use of the course room of the meat hygiene working group only at the beginning and end of the semester

7.2.4 Access restrictions

Slaughterhouse/sausage manufacture: Unauthorized persons are generally prohibited from entering the slaughterhouse. Entry and exit from the slaughter area is only possible via the hygiene lock and is subject to the regulations posted there (the relevant instructions must be followed). Every person entering the area must undergo hygiene measures such as disinfecting hands and boots and wearing appropriate hygiene clothing. Access to the slaughterhouse area is only permitted in impeccable hygiene clothing. This varies depending on the role (students, employees, guests) and is only to be worn within the area. Hygiene clothing includes white coats, trousers, boots and, if necessary, disposable clothing (see annex: GHO). All removable jewelry, especially on hands and forearms, must be removed before entering the area. Non-removable piercings must be properly taped. Smoking, eating and drinking are strictly prohibited in the entire slaughter area and the sausage manufacture, including the yard in front of the slaughterhouse. It is prohibited to bring unsuitable material into the slaughter area or to slaughter animals that are not suitable for consumption, unless this is done for educational purposes. In all cases, the slaughter of animals requires prior authorization.

Course room/meat laboratory: Unauthorized persons are generally prohibited from entering the classroom. Access to the classroom is only permitted in a clean, immaculate, long-sleeved white lab coat. Compliance with hygiene and safety regulations is regularly checked. Violations must be reported immediately. The exact provisions can be found in the institute's operating instructions and laboratory regulations (see instruction protocols).

7.2.5 Instructions / training

Before starting work for the first time, students and the relevant staff receive comprehensive safety training from the responsible laboratory staff. This includes specific biohazards, the correct handling of biohazardous substances and the general rules of conduct in the slaughterhouse/course room and meat laboratory, including the valid procedures for entering and leaving the area. The staff, including doctoral students and student assistants, are trained regularly and on an ad hoc basis in the handling of biohazardous substances.

Slaughterhouse/sausage manufacture: The detailed behavioral guidelines are set out in the operating instructions, laboratory regulations and hygiene plans of the institute of food hygiene (see annex: GHO). In addition, corresponding hygiene instructions are posted in the relevant sections of the hygiene lock and the slaughterhouse.

Course room/meat laboratory: The exact rules of conduct can be found in the hygiene regulations of the institute of food hygiene (see annex: GHO).

7.2.6 General Rules

Students who are pregnant are excluded from participating in the course. In such cases, participation in the course is not possible. Affected students are asked to contact the institute management before the course begins.

Slaughterhouse/sausage manufacture:

The use of the processing room of the sausage manufacture is separate from the use of the slaughterhouse. Street clothes must be changed for clean white clothes in the changing rooms in the basement of the Institute of food hygiene. These consist of long white trousers and a long-sleeved white lab coat. The street shoes remain on for now; the white, clean boots are only put on in the hygiene lock of the slaughterhouse.

- Students: White clothing and white boots must be brought by themselves.
- Staff: White clothing is provided by the institute of food hygiene; white boots must be brought by the staff.
- Guests/external persons: Disposable clothing (e.g.: overalls, hoods, overshoes, aprons if necessary) is provided at the entrance door of the hygiene lock.

Personal items such as bags or backpacks must be left in the changing rooms and may not be taken into the slaughterhouse. The hygiene lock may only be entered and exited with street shoes after passing through the hygiene mat (see annex: GHO). There are benches in the hygiene lock where street shoes must be exchanged for clean, white boots. Disposable clothing (caps, aprons if necessary) is then issued. Guests/Externals: If required, additional overalls and overshoes will be provided. Access is only possible via the disinfection tank (see annex: GHO). Compliance with the regulations and checking the cleanliness of clothing and boots is the responsibility of the employees of the Institute of food hygiene.

After entering the slaughterhouse, hands must be disinfected (see annex: GHO). Disposable gloves are then issued. Touching your mouth and nose should be avoided. Fingernails should be kept short. Eating (including chewing gum), drinking, smoking and applying make-up (including the use of lip care products) are strictly prohibited in the slaughterhouse. When handling knives, the prescribed safety precautions must be observed to avoid injuries. All incidents must be documented and reported to the responsible personnel.

Any injuries must be reported to the appropriate personnel immediately. Open wounds must be properly covered (before putting on disposable gloves).

When leaving the slaughterhouse/sausage manufacture, disposable gloves must be disposed of in the designated waste bins. Hands and wrists must then be thoroughly washed and disinfected (see annex: GHO). The slaughterhouse/sausage manufacture may only be left via the disinfection tub (see annex: GHO). Any heavy soiling of the boots must be removed beforehand by mechanical cleaning (water hose; boot washing). Before leaving the hygiene lock via the hygiene tub (see annex: GHO), boots must be exchanged for street shoes. The change from hygiene clothing to street clothes takes place immediately afterwards in the changing rooms in the basement of the institute of food hygiene. Worn hygiene clothing may only be reused after it has been properly cleaned.

Classroom/meat laboratory:

Entry into the classroom is only permitted with a long-sleeved, white and clean lab coat (see course regulations). Any injuries must be reported to the appropriate personnel immediately. Open wounds must be properly covered. Eye protection and the wearing of protective gloves must be tailored to the expected hazards. The resistance information provided by the glove manufacturer must be observed! If protective gloves are worn for laboratory work, they must be removed when leaving the laboratory. Hands and wrists must then be thoroughly washed and

disinfected The lab coat must be removed immediately after leaving the classroom. Worn hygiene clothing may only be reused after it has been properly cleaned.

7.2.7 Cleaning Disinfection

Slaughterhouse/sausage manufacture: All surfaces are properly cleaned and disinfected before and after use (see cleaning and disinfection plan). The disinfectants used must be tailored to the respective pathogens. Detailed information on this can be found in the hygiene plans or the cleaning and disinfection plan. Specifications for cleaning and disinfection of equipment and materials can also be found in the hygiene plans or cleaning and disinfection plan (see appendix: hygiene plan). Students, staff, guests and external visitors are encouraged to independently carry out hygiene measures such as disinfecting hands, boots and, if necessary, aprons. The cleaning of the slaughterhouse, the adjacent hygiene lock and all equipment, instruments and materials is carried out exclusively by the staff of the institute of food hygiene (see annex: GHO). After completion of the course, the slaughterhouse premises must be locked by the food hygiene staff.

Course room: All surfaces are properly cleaned and disinfected before and after use (see cleaning and disinfection plan). Responsibilities (laboratory and equipment managers) have been assigned for each room, who are to monitor, organize and guarantee the cleaning of equipment and laboratory work surfaces. Annual plans for documentation are posted in the laboratories. Specifications for cleaning and disinfection of equipment and materials can also be found in the hygiene plans or cleaning and disinfection plan (see annex: GHO). After completion of the respective laboratory work, the laboratory tables must be disinfected and cleaned by the food hygiene/meat hygiene staff (see annex: GHO). After the course has ended, the food hygiene/meat hygiene staff must turn off the gas, switch off electrical systems and equipment and disconnect them from the power supply. Equipment or other work materials that are no longer needed must be returned to their place. The laboratories and the course room must be locked.

7.2.8 Disposal of material (infectious/non-infectious)

Slaughterhouse: cat. 1-3 depending on the material available (unsuitable material, but possibly complete carcasses with by-products). The confiscation room is cleaned and disinfected once a week (see annex: GHO). The confiscated goods are disposed of in the black area of the slaughterhouse. After each emptying of the confiscated containers (bins), they are cleaned and disinfected. In addition, the confiscated goods room is cleaned and disinfected after each use or after confiscated goods are transported out of the room.
Sausage manufacture: At the end of production, waste is transported in closed or covered, specially marked containers through the hygiene sluice and the slaughterhouse to the confiscation room.
Course room: Until the bacterial and parasitic pathogens of risk groups 1 and 2 are disposed of, they are collected in leak-proof, tightly sealed containers and inactivated (autoclaved) before disposal.

7.2.9 Special features in the context of teaching

- lecture halls, requirements for private protection clothing
- annex hygiene regulations (Geschäfts- und Hygieneordnung (GHO))

8 Chapter Teaching and Research Farm Oberholz (LFG-Oberholz)

8.1 Introduction

The LFG- Oberholz is located about 7 km south of the Veterinary Faculty. It counts a cattle herd of 45 milking cows (Holstein Friesian), plus about 40 calves and young cattle. Forty sows and 240 fattening pigs (Landrace, Duroc, Angler Saddleback), as well as around 300 sheep (Merino meat sheep, German Blackhead sheep, Coburger Fuchs sheep), and six warmblooded horses are currently kept at the LFG. Cattle, pigs, and sheep are used for both teaching and research. The number of animals is stable, except variations due to the season or to ongoing experimental protocols.

All animals are kept in line with the legal requirements (Animal Health Act, Livestock Trade Ordinance, Pig Keeping Hygiene Ordinance, Animal Welfare and Farm Animal Keeping Ordinance). These species are kept in a commercial farm where animals remain until retail or slaughtering. They are therefore healthy animals. The horses are used for research only and are the property of the respective project PI.

8.2 Health and Hygiene Management

Both the cattle herd and the pig herd are closed herds and no animals are introduced. The herds are regularly monitored for certain infectious diseases: *Salmonella* sp., PRRS Virus, porcine Herpesvirus or bovine herpesvirus, *Brucella abortus*, *Mycobacterium bovis*, enzootic bovine leukosis, respectively.

The sheep flock is negative for *Brucella* sp., Maedi-Visna-Virus, and *Coxiella burnetti*. To the closed sheep flock only single male animals are introduced as needed for maintaining a high genetic standard. When a new animal is introduced into the herd, it is housed in a quarantine box. Its identity is checked and clinical examination is carried out. Blood samples are taken and tested serologically for Q-fever and Maedi-Visna . The animal is only introduced into the herd if testing negative for all complementary examinations.

8.3 Epidemiological surveillance

The responsibility of the cattle, small ruminant, and pigs is the faculty's Clinic for cloven animals, director Prof. Starke. He is responsible for enforcing the laws on epidemiological surveillance, including purchases (see above) or suspicion of contagious diseases. When an animal is purchased, it is called within 48 hours after acquisition. He examines the animal and takes a blood sample. Other samples will be taken depending on the animal’s destination or operation status (see above). If cattlemen or students notice one or more animals showing excessive salivation, they will immediately notify the responsible veterinarian who will examine these animals. If clinical examination does not allow discarding the suspicion of a reportable disease, the Dean of the faculty will be officially notified (for reportable diseases, see Chapter 1). If an infectious disease is suspected, cleaning and disinfection will be performed and movements, of animals, people and equipment will be restricted, according to the animal disease crisis plan (annex 2).

8.4 Staff

Cattlemen wear coveralls, jackets and security boots that are specific and adapted to their work. Such attire is only worn in the farm and cleaned regularly. Staff members regularly wash their hands according to the procedures described in Chapter 1. When farm workers must visit other farms, they must use a different set of clothes (coveralls, jackets and boots). Showers, a cloakroom and a refectory are located in the Farm's administrative building. Drinking and eating are not allowed outside the administrative building.

8.5 Student activities at the experimental farm

Different types of activities are organized for students at the Farm: they follow practical works in animal hygiene, animal nutrition, clinical preparatory courses, and are also involved in treatment of individual animals. The content of such activities is well planned and determined beforehand. They consist mainly in prophylaxis (vaccination, blood sampling), foot care and trimming, disbudding, rectal palpation, bolus application, castration and primary care of new born calves and lambs. Students are also involved in caring for sick animals. Student work with the animals is only possible at certain times to ensure maximum animal welfare and occupational safety.

8.6 Procedure for students

Students wear the coveralls and rubber boots available in the locker room in the administrative building. These must only be worn in the farm, and are not intended for use elsewhere. Students must put them on in the locker room before going to the stables. Personal boots must not be worn in the farm. Students use their own thermometer and stethoscope for clinical activities. These materials must be regularly cleaned with soap and water, and disinfected with hand sanitizer. One coverall can be used several times. It must be dropped in the container for dirty laundry when macroscopically dirty. When dirty, coveralls are washed in a high capacity washing machine at the LFG- Oberholz. When coming back from the stables, boots must be thoroughly washed at the boot-washing stations located at the entrance to the locker rooms in the administrative building. Students wash their hands with soap in the locker room, after the farm visit in accordance with the procedures described in Chapter 1.

8.7 Animal management

Solid manure is temporarily stored in a specific area at the LFG before it is spread on acres and Greenland, according to the relevant legislation (Fertilizer Ordinance). This area is equipped with a tank for the juice of manure. Liquid manure and slurry is recovered in the slurry tank until it is spread as the solid manure. Details of the hygiene management and the overall organization of the LFG- Oberholz are defined in the “Hygiene Regulations of the LFG”, see in the annex.

9 Chapter Anatomy

9.1 General requirements for personnel, students and visitors

All employees are given appropriate general instructions, which are updated annually for work in the S2 laboratory, separate instructions and instructions are given by the head of the S2 department. Students are informed about the internship regulations at the beginning of the anatomical course, instructions are given in the first dissection lesson, and acknowledgement is confirmed with a signature. Visitors may only enter the rooms if accompanied by trained personnel.

9.2 Type of activities

- Preparation of macroscopic and microscopic preparations for teaching
- Microscopic staining including immunohistochemistry and immunofluorescence
- Cell culture
- Electron microscopy
- Training of students in macroscopic and microscopic anatomy on appropriate preparations (fresh and fixed)

9.3 Laboratory classes

Fresh and fixed animal material (all animal species, different origins), no animal bodies are brought to the institute that can be proven to have an infectious disease.
Laboratories: Possible materials up to BSL-2 of the Biological Agents Regulation and Genetic Engineering Regulation.

9.4 Access restrictions

Unauthorized persons are generally prohibited from entering the laboratories. The areas with access restrictions are clearly marked with signs. Depending on the biohazard risk, different rules of conduct and access restrictions may apply. Before entering the laboratories, visitors, technicians and service personnel are informed about the existing risks and the applicable behavioral measures. The exact provisions are set out in the operating instructions and laboratory regulations of the respective institutes and laboratories.

9.5 Instructions/training

Before starting work for the first time, students and employees are trained by the person responsible for the area as part of a safety briefing on the specific biohazards, as well as the handling of biohazardous substances and the general rules of conduct in the relevant rooms. All employees, including doctoral students and student assistants, are also trained once a year in the handling of biohazardous substances or are given instruction on an ad hoc basis. The exact rules of conduct are set out in the operating instructions, laboratory regulations and hygiene plans of the respective institutes and laboratories.

9.6 General Rules

Protective clothing: Appropriate protective clothing (coats) must be worn by all persons in all work rooms of the institute. These coats are provided in the S2 laboratory and are stored and cleaned separately. Long hair must be tied back accordingly; wearing watches and jewelry is not permitted.

Footwear: closed shoes must be worn; appropriate footwear is available in the S2 laboratory and may only be worn there. Rubber boots must be worn for certain activities or practical exercises.
Gloves: Disposable gloves (latex and nitrile, unpowdered) are available for use by employees in all rooms. Students wear disposable gloves that they have brought with them during practical lessons
Safety glasses and respiratory protection: Safety glasses and/or respiratory protection must be worn for certain activities; these are available in the relevant work areas.
Storage of bags/backpacks, street clothes: Students have lockers available in the institute in which they can store jackets, bags, etc. during lessons. Eating, drinking and smoking are prohibited in all work rooms
Hand hygiene: After each activity, hands must be washed and disinfected in accordance with the hygiene regulations posted; gloves must be disposed of in the containers provided. Injuries of any kind must be reported immediately. They are cleaned and covered with plasters/bandages. All injuries to employees and students are recorded in an accident log.

9.7 Cleaning Disinfection

Students clean their dissection equipment in the designated tubs with cleaning agents, then the instruments are disinfected in a disinfection bath. Surfaces are cleaned and disinfected after and (if necessary) before use. The disinfectants used must be appropriate for the pathogens used (for details see hygiene plans).

9.8 Disposal of infectious/non-infectious material

All materials are disposed of in accordance with legal requirements and the institute's regulations. Animal material is collected from the carcass disposal facility via pathology.
All materials from the S2 laboratory that could potentially be infectious are autoclaved before disposal.

10 Chapter Pathology

10.1 Definitions and responsibilities

The Institute of Veterinary Pathology is an independent part of the Department for Pathology and Anatomy and the University Veterinary Hospital. The current professorship for General Pathology and Special Pathological Anatomy and Histology, held by Prof. Dr. Reiner Ulrich Ph.D., is serves as Institute Director and the management of the Institute's diagnostic services, which are bundled in the Diagnostics Working Group. In the organization and execution of the service business, the director is represented by two laboratory heads: one for the necropsy area, currently Dr. Jan Schinköthe; and the histotechnological laboratory, currently Dr. Denny Böttcher. Some designated titles are relevant to organize the biosafety relevant aspects in this SOP and are as follows:

- **Biosafety officer** (currently Dr. Jan Schinköthe) is an expert appointed by the university to advise on the preparation of risk assessments, other safety-related issues, support in monitoring the effectiveness of technical safety measures, instruct employees and check compliance with safety measures.
- **The head of the necropsy area** is a veterinarian who has completed a specialized training in pathology (German board-certified veterinary pathologist or diplomate of the ECVP/ACVP). He is responsible for the entire necropsy area and, in cooperation with the biosafety officer, draws up work instructions and risk assessments, coordinates the procurement of equipment and materials, determines pricing, structures the work processes and protective measures in the area and coordinates enquiries from internal and external cooperation partners within the framework of scientific projects.
- **The Head of Diagnostics** is a veterinarian who has completed a specialized training in pathology (German board-certified veterinary pathologist or diplomate of the ECVP/ACVP). He is responsible for the day-to-day business in the section room. The veterinarian on duty, trainees and technical staff in the section area are bound by his instructions.
- **The veterinary on duty** is a veterinarian who is usually undergoing further training to become a German board-certified veterinary pathologist or a diplomate of the ECVP/ACVP. Trainees and technical staff in the section are bound by his instructions.

This SOP describes all tasks from the areas of responsibility of teaching, diagnostics and animal cadaver management that are subject to special restrictions due to the handling of biological substances and are generally carried out within the necropsy area. These are basically non-directed activities in which the type and quantity of biosubstances present is not known a priori. For all activities, it must be assumed that there is a risk potential with biological substances of at least risk group 2 in accordance with the Ordinance on Safety and Health Protection in Activities involving Biological Agents (BioStoffV). Legally compliant activities in the necropsy area are regulated in the operating instructions for necropsy and logistics areas at the Institute of Veterinary Pathology, Faculty of Veterinary Medicine, Leipzig University. The descriptions and information contained in this SOP are to be understood as excerpts and explanations from this area specific operating instructions.

The necropsy area of the Institute of Veterinary Pathology is a registered facility (registration number: DE 1471 3011 721) in accordance with Article 17(1)(a) of Regulation (EC) No 1069/2009, in which animal by-products are processed and permanently stored for research and other specific purposes, notwithstanding Articles 12-14 animal by-products and derived products for exhibition purposes in the context of teaching, as well as for diagnostic, educational or research purposes.

The main rooms where biological material respectively animal cadavers are handled are the necropsy room (E014), the preparation necropsy/photo room (E013), the passageway (E018), and the cadaver room (E019). All other rooms serve as either service, storage or donning and doffing areas where primary work with non-inactivated animal tissues and biological substances is prohibited.

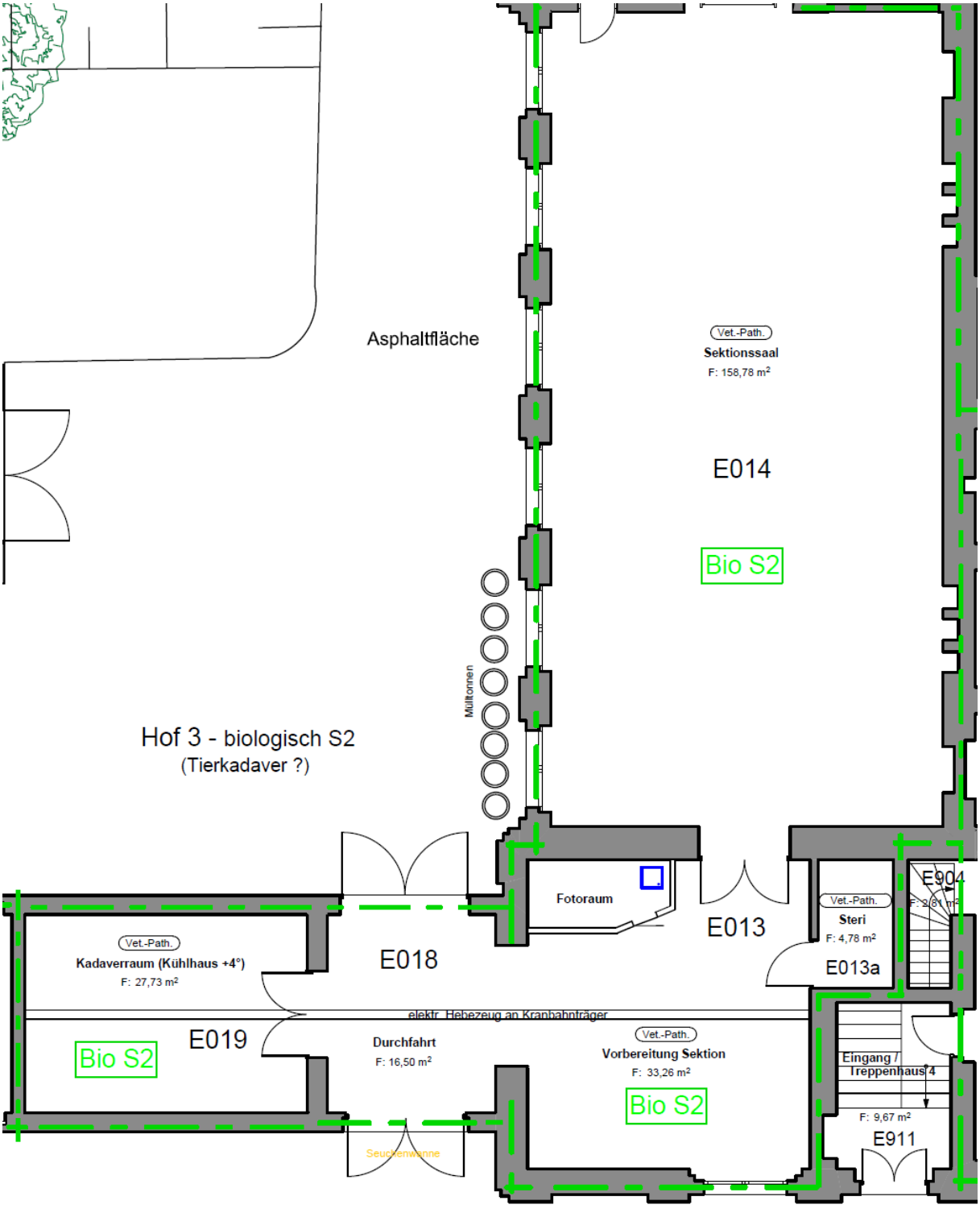


Fig. 1: Floor plan of the main necropsy and cadaver logistics area assigned as biosafety level 2 (green markings).

10.2 Type of activities

The Institute of Veterinary Pathology is responsible for:

1) Teaching: the implementation of all theoretical and practical courses in pathology in accordance with German legislature, the Ordinance on the Licensing of Veterinarians (TAppV), clinical-pathological cross-sectional courses, as well as further training for specialist veterinary training including an internship and residency programme for the acquisition of the Diplomate European College of Veterinary Pathologists.

2) Diagnostics: dissections and light microscopic examinations of animal carcasses, tissue samples and cytological preparations of all vertebrate species as part of the diagnostic services, that are provided for the faculty and for external clients in the state of Saxony and Germany.

3.) Animal carcass management: central collection of all animal carcasses that die within the Faculty of Veterinary Medicine and temporal storage until forwarding to state funded rendering plant (Zweckverband für Tierkörperbeseitigung Sachsen). Animal carcasses can be handed in for necropsy or disposal during business hours. As a rule, a technical employee from the necropsy area accepts the carcass and the examination order or disposal slip. The managing directors of the veterinary clinics each have a key to the necropsy area so that they can also hand in animal carcasses at night and at weekends. The managing directors of the veterinary clinics must ensure that only persons who have received a valid safety briefing for the necropsy area and, if applicable, have been trained and authorized by name to operate the monorail crane track are issued with the key and granted access. The animal carcasses must be clearly labelled with yellow or grey adhesive tape on a limb as a necropsy case or disposal case. The corresponding examination order or disposal slip must be deposited in the anteroom at the agreed location immediately upon delivery.

10.3 Access and restrictions

Access to the necropsy room (E014) and the associated side rooms (E016, E017, E066, E013, E013a, E018, E019) is only permitted on official business for the purpose of carrying out diagnostic, teaching and research activities and for students on the occasion of teaching events, for colleagues from the clinical facilities and, by individual arrangement, interested students during ward rounds. Working alone in the necropsy area is generally prohibited. Independent work in the necropsy and logistics area requires a training period of at least 2 weeks by specialized staff. For health and safety and veterinary hygiene reasons, a competent person (at least a technical employee) must always be present when dissecting animal carcasses. Electric hoists and saws may only be operated by authorized persons.

Spending time in the necropsy room and necropsy activities in general must be considered potentially hazardous to health, as there is a constant risk of slipping, injury (scratches, cuts and puncture wounds), infection and irritating or corrosive chemicals (acids and alkalis). A potential risk of infection arises from oral ingestion, inhalation of aerosols, infection through injuries or possibly direct contact with zoonotic pathogens.

Due to the potential risk of infection and the use of hazardous substances, persons with the following characteristics must not be exposed to the risk of infection and have therefore no access:

1. **pregnant/breastfeeding women** (§4 MuSchArbV and §3 BiostoffV)
2. **persons with surgical wounds** and tattoos with incomplete wound healing (a confirmation of fitness to carry out activities in the dissection area by the attending physician must be presented by the person concerned)
3. **immunocompromised persons**

Deviations from points 1-3 will be discussed and decided on an individual basis in consultation with the responsible company doctor with the involvement of the Environmental Protection and Occupational Safety Department (BfUA) of Leipzig University

10.4 Teaching formats

Courses are regularly held in the necropsy area in the following formats: **1)** post-mortem exercises, **2)** pathological-anatomical demonstrations and **3)** clinical-pathological case demonstrations. Due to the widely differing requirements and group sizes, course-specific regulations apply. The animal cadavers and organs required for the course come from the material sent in for diagnostic examinations and the teaching collection built up from this material, which currently consists of approx. 900 wet specimens stored in Klotz's solution, approx. 1600 demonstration objects arranged in closed glass containers, approx. 300 dry specimens and approx. 80 plastinates. In order to reduce the formaldehyde load, efforts are being made to continuously increase the proportion of plastinates by generating new cases from the diagnostic specimens. The admission conditions at the veterinary hospital allow the Institute of Veterinary Pathology to select animal carcasses from the pool of carcasses received for disposal only for teaching purposes at its own discretion on days when a sufficient number of cases are not sent in as part of the diagnostic service.

As part of the post-mortem exercises, students carry out a necropsy in small groups of 6 students under the supervision of a veterinary staff member from the Institute of Veterinary Pathology. During the first course, students can observe the exact procedure of the necropsy in a compulsory video and work on it in the written teaching materials. In the subsequent courses, the opening of the animal carcasses and the removal of the organs must be carried out by the students. The morphological alterations of organs and tissues observed by the students and the morphological diagnoses to be made are discussed in detail with the supervising veterinarian. In the early briefing, the veterinarian on duty and the head of diagnostics selects cases for the necropsy exercises on the basis of the available anamnestic information, in which an increased risk potential is generally not to be assumed. Exposure to biological substances during post-mortem exercises is generally assumed to be equivalent to that of a veterinary employee. Therefore, undergraduate students wear the same work clothing and PPE as employees of our institute and follow the same hygiene rules as the Institute's veterinary staff for the post-mortem exercises (see point 6, PPE staff).

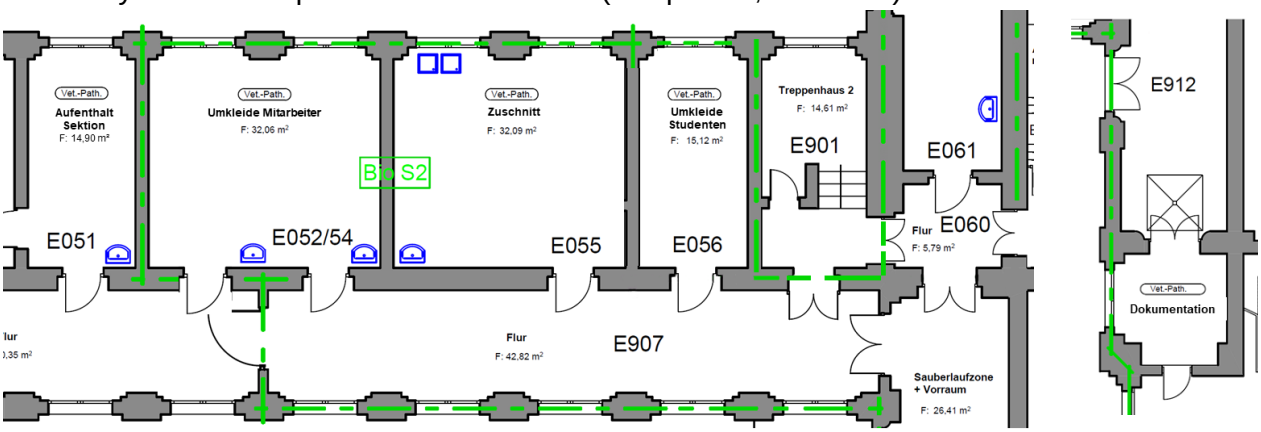


Fig. 2. Undergraduate students that participate in post-mortem exercises enter the BSL-2 area via the stairway 2 (E901) and change their private clothing in the students donning and doffing room (E056). Technical personnel have a break room (E051) outside the BSL-2 area. To enter the BSL-2 area all employees of our institute go through the donning and doffing room (E052/54). Next employees can go to the trimming room (E055) or via the corridor (E907) to

the main necropsy area. Undergraduate students have no excess to the trimming room and enter the main necropsy area via E907 and clean area/documentation (E912).

The **pathological-anatomical lectures** are held in a split format with parts **A:** lecture in the small lecture theatre and **B:** practical training in the necropsy room (E014). For each course, the semester is divided into two groups of approx. 60 people, one group of which takes part in format A or B respectively. After half of the course, there is a break and the groups swap teaching formats.

In part A, the students are located in the audience area of the small lecture theatre. The lecturer is located in the floor area, which is part of the necropsy area. In part A, the lecturer can demonstrate the dissection technique, description and assessment to the students using animal carcasses, animal body parts and specimens or images thereof and practise these with the students. Animal carcasses and parts of animal carcasses that are not safely inactivated must remain within the necropsy area. Safely inactivated specimens are organs fixed in Klotz solution or plastinated organs. The lecturer must comply with the rules applicable in the necropsy area. The students are located outside the safety area and are not subject to any legally prescribed restrictions. Students are not permitted to enter the section area directly from the spectator area.

Fig. 3: View in the lecture hall 1 (1039) with access points for students (black asterisks). Access to the floor is not permitted for students.

As part of the pathological-anatomical instructions **Part B**, students work in groups of approx. 10 students to examine unknown organs with defined lesions placed on distinct necropsy tables. The organs used are usually taken from the diagnostic section of the Institute of Veterinary Pathology. In order to avoid students coming into contact with biological substances, only safely inactivated preparations are generally used in the pathological-anatomical part B lectures. On the days of the event, diagnostic necropsy work in the necropsy room will be ended early and cleaning and disinfection will be carried out. The preparations laid out on the tables for the students are safely inactivated by the formaldehyde contained in the Klotz solution. All fixed organs are thoroughly rinsed in fresh water before students come into contact with them. The students can look at and touch these specimens. The use of tools of any kind by the students is not intended in this teaching format.

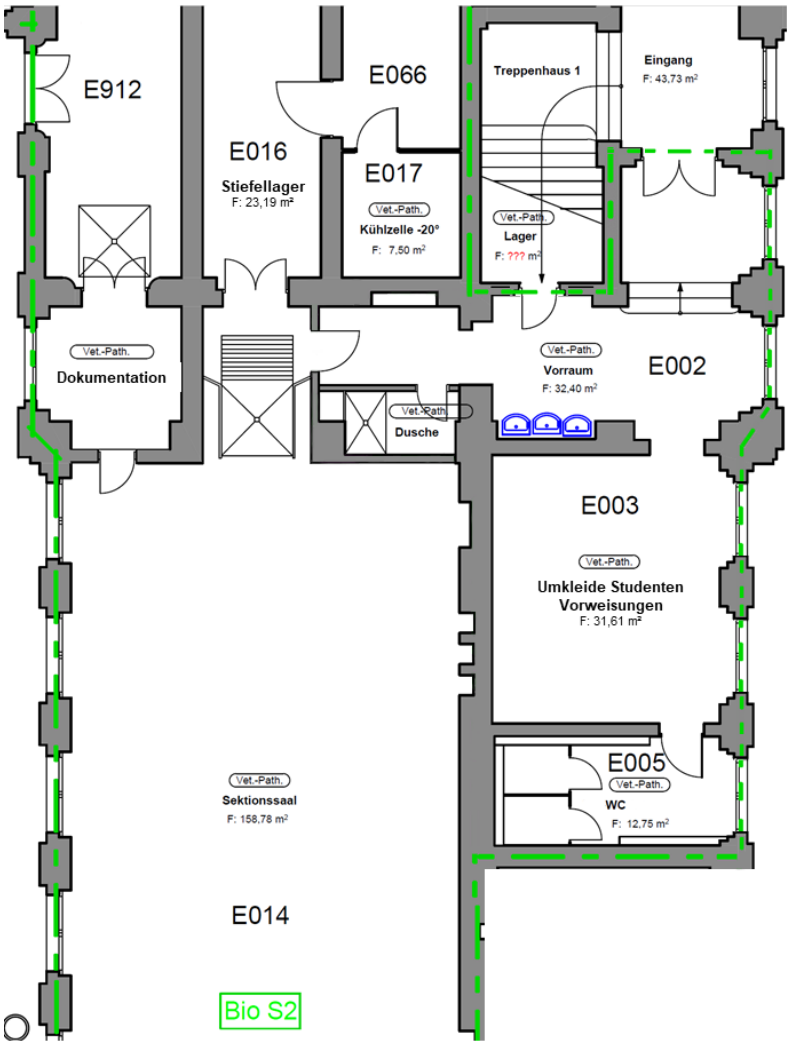


Fig. 4: For **Part B** undergraduate students enter the BSL-2 area via the anteroom (E002) and the student donning and doffing room (E003). In E003 students can store their private belongings and private clothing. The Institute of Veterinary Pathology provides each student with a complete set of PPE, consisting of a pair of rubber boots and a blue cotton gown, which are worn in E002 to enter the main necropsy area via the rubber boot storage room (E016). There each student will exchange the rubber clogs for a pair of rubber boots. The entire set of PPE is student-specific and is worn throughout the duration of the teaching format. The student-specific PPE is cleaned and disinfected at the end of the term.

Fig. 5: The picture on the left shows the student donning and doffing room (E003) with the rubber clogs and the picture on the right shows the rubber boot storage room (E016) where student specific PPE is stored.

In the pathological-anatomical referrals in Part A, there is no risk of contact with biological substances that exceeds the general risk to life, and in Part B there is a significantly reduced risk compared to necropsies, since only plastinated organs and inactivated tissues are shown for teaching purposes. No special safety rules therefore apply to Part A. For Part B, the statutory access restrictions and the instruction obligation for the section area apply.

The minimum PPE required for Part B consists of rubber boots, a blue gown, nitril gloves. Due to the above-mentioned measures, contamination of the gown with biological substances in the pathological-anatomical demonstrations is excluded.

The **clinical-pathological case demonstration** takes place in the main lecture hall of the VMF (Herbert - Gürtler - Haus) which can accommodate a complete semester.
In addition to these lectures, colleagues from the clinical facilities and, by individual arrangement, interested students have the opportunity to view the cases in the necropsy room and discuss them with the veterinarian on duty and the head of diagnostics during the daily ward round, usually at 12:00 a.m. Beforehand, the organs are laid out on the necropsy tables for inspection, the necropsy room is cleaned and all tools are removed. Necropsy operations are suspended during the visit. Visitors are prohibited from touching animal by-products of any kind, as well as the section tables and equipment. For the ward round, the access rules for the dissection area apply in accordance with the pathological-anatomical instructions for undergraduate students as described in Part B.

10.5 Instruction

Students are informed about the special dangers and safety rules in the necropsy area before they enter the necropsy area for the first time, usually at the beginning of the 7th semester, and at least once a year thereafter. This is currently done by means of a 30-minute video which students can watch repeatedly if in doubt. Knowledge of the instruction must be confirmed by signature when entering the section area. For colleagues from the clinical facilities and students who wish to enter the section area as part of the ward round, the same instruction rules apply as stated for students.

Independent work in the necropsy and logistics area, e.g. for new employees of the Institute of Veterinary Pathology, interns and colleagues from other institutions of the Faculty of Veterinary Medicine, e.g. in the context of necropsies as part of cooperative research projects, requires a training period of at least 2 weeks by competent personnel. Working alone in the necropsy area is generally prohibited. For health and safety and veterinary hygiene

reasons, a competent person (at least a technical employee) must always be present when dissecting animal carcasses. Electric hoists and saws may only be operated by authorized people.

PPE for staff and undergraduates that participate in necropsy exercises

The necropsy area is entered by personnel via the donning and doffing room (E052/54) and begins with a complete change of private clothing. Each employee on duty will find a locker area there for temporary storage of their private clothes. Carrying electronic devices (mobile phones, cameras, etc.), jewelry and watches is strictly prohibited. Smoking, eating, and drinking in this area is strictly prohibited. The pool laundry, consisting of green surgical gowns provided by the Institute of Veterinary Pathology are regularly washed by a commercial textile cleaning company, and is also stored in this room. The pool clothing must be worn in the necropsy area as specific work clothing. Personnel now wearing scrub suits and long trousers do enter the cleanliness zone (E912) with nitril gloves to put on boots and then enter the documentation room.

There, eye protection (e.g. goggles) is put on. In the further course of donning with PPE, the rubber boot storage room is entered via the necropsy room, where an apron, one (or one pair) cut protection glove(s) and upper gloves (chemical protection gloves, approved according to EN 388, EN 374, EN 421) are put on. The glove concept is to be implemented as follows and is accompanied by the following properties:

1. **under gloves (nitrile)** = to be considered as not contaminated
2. **cut-resistant gloves** = not to be considered contaminated
3. **upper gloves (chemical protection gloves)** = always to be considered contaminated, only with these gloves is it permitted to touch animal carcasses and parts.

PPE for standard necropsies consists of:

1. Clothing in a color other than white (e.g. green tunic and long trousers)
2. Rubber boots
3. Under gloves (nitrile)
4. Eye protection (goggles/visor)
5. Cut protection glove on the hand not holding the knife
6. Waterproof apron
7. Upper gloves (chemical protection gloves)

10.6 Cleaning and disinfection

As a rule, rubber boots, outer gloves (yellow chemical protective gloves) and aprons must be cleaned and disinfected with 2% Venno Vet 1 Super (formic acid) and then left to act for at least 30 minutes (preventive disinfection in accordance with the DVG approval protocol) using the dispenser systems provided for this purpose. The PPE wetted with formic acid is taken to the rubber boot storage room (E016) for decontamination and drying on the holders provided for this purpose. Hands and forearms are then thoroughly cleaned with soap, dried and finally wetted with disinfectant (in accordance with EN 1500):

- Apply alcohol-based hand sanitizer from the wall dispenser to dry hands (elbow control!)
- Leave on for at least 3 minutes (see manufacturer's instructions), rub in well; repeat with a second portion if necessary

If conditions arise during the dissection that have led to a high degree of contamination or soiling (feces and blood) of the outer and undergarments and the person, a shower must be taken before leaving the necropsy area.

As work is usually undirected, i.e. not focused on a specific biological agent, preventive disinfection is carried out with 2% Venno Vet 1 Super and an exposure time of at least 120 minutes. The disinfectant application systems used create a disinfectant foam, which delays evaporation of the water phase and thus ensures constant exposure parameters. Final cleaning takes place at least once a week using an alkaline foam cleaner (Calgonit NF 422, application concentration: 2.0-5.0 %). This is followed by surface disinfection of the entire necropsy room in accordance with the hygiene plan.

10.7 Risk management and hazards

The institute's director is generally responsible for the proper and legally compliant operation of the dissection area. He may delegate this to the head of the necropsy area and the head of diagnostics or the veterinarian on duty or authorize a technical employee (dissection technician) to carry out certain necropsies, partial dissections and sampling of animal cadavers (animal species, pathogens, work steps, equipment if applicable must be specified) independently and under his own responsibility after appropriate written instruction on this operating instruction.

Employees must be informed about the nature and hazards of the necropsy cases and the potentially associated biological agents. This includes the morning meeting (usually at 08:00 a.m.) at which the head of diagnostics, the veterinarian on duty and at least one necropsy technician evaluates the daily business and, if necessary, determine special measures (e.g.: carrying out high-risk necropsies with increased protective measures). At the early morning meeting, the veterinarian on duty and the head of diagnostics uses the available anamnestic information to select cases for the necropsy exercises that are not generally expected to have an increased risk potential.

The veterinarian on duty and the head of diagnostics determines in advance (morning meeting or from receipt of the animal carcass at the earliest) whether the animal carcass to be dissected is a high-risk section. The necropsy of these animal cadavers is therefore usually carried out by two people (dissection technician and veterinarian on duty) under spatial separation in the preparation room (E013) under special protective conditions and is to be limited to a maximum of 4 people (head of institute, veterinarian on duty, the head of diagnostics and dissection technician). No risk sections are carried out in the same room during courses.

Necropsies which, according to the preliminary report, indicate that the presence of BSL-4 pathogens is highly probable are generally prohibited. Necropsies which, according to the preliminary report, indicate that the presence of notifiable animal diseases is highly probable, or if typical macroscopic findings during the dissection activity led to the suspicion of a notifiable or highly infectious disease during the necropsy, action must be taken in accordance with the Animal Disease Crisis Plan (Annex 2) of the VMF in the currently valid version. Necropsy activities must be suspended for the time being and the risk situation reassessed accordingly. The veterinarian on duty must immediately decide on risk-minimizing measures, such as evacuation of the necropsy room, possible interim disinfection or the donning of additional protective equipment for all persons in the dissection room. If possible, the animal carcass, all its parts and the objects that have come into contact with it must be isolated in the anteroom before the necropsy is continued. The following internal reporting chain must be set in motion immediately: veterinarian on duty → head of diagnostics → head of necropsy area and institute director. It is then determined who will report the incident

externally. The following persons/institutions must then be informed: Animal Disease Officer of the Faculty of Veterinary Medicine (currently Prof. Uwe Truyen Animal Hygiene and Veterinary Public Health) and the Veterinary and Food Inspection Office of the City of Leipzig.

As work is usually undirected, i.e. not focused on a specific biological agent, preventive disinfection of all surfaces and reusable clothing is carried out with 2% Venno Vet 1 Super and an exposure time of at least 120 minutes. If a pathogen with a higher tenacity is subsequently detected by a microbiological or molecular biological test result, disinfection is adapted to the respective pathogen (for details see https://www.desinfektion-dvg.de/dvg-desinfektionsmittellisten/desinfektionsmittel-tierhaltung). In this case, the head of diagnostics must inform the head of necropsy area and the necropsy technicians.

In the case of directed activities, for example in experimental infection studies with pathogens up to risk group 2, this is known in advance so that the optimum disinfectant for the respective pathogen is used as a preventative measure.

If injuries of any kind occur, they must be reported to the head of diagnostics and, if applicable, to the head of the necropsy area and documented in the first-aid log. Alterations that go beyond minor injuries must be reported to an external physician and the biosafety officer and the head of the institute must be informed immediately.

10.8 Disposal of infectious/non-infectious material

These include materials and objects (disposable paper towels, syringes, gloves and disposable overalls, etc.) that were used during the necropsy and are potentially contaminated with biological substances. They are placed in sealed, externally disinfectable bags and temporarily stored in disposal containers specially assigned to the institute until they are disposed of as household waste. The containers are stored in the inner courtyard, cleaned and disinfected on the outside once a week, driven through the passageway (E018) and placed on the pavement for emptying.

Use the yellow disposal containers to dispose of sharps, including cannulas and scalpel blades. The containers must be placed as close as possible to the place of use of the pointed, sharp or fragile medical instruments. They must not be decanted. These containers are collected every Monday by the university's disposal staff after the number of containers to be collected or replaced has been specified, and finally incinerated.

Animal carcasses and other animal by-products as defined in Article 3 of Regulation (EC) No. 1069/2009 (e.g. organs, blood, serum, etc.) as well as unfixed and fixed organs/samples including the formaldehyde solution they contain and other material contaminated with biological substances must be collected accordingly and stored properly until collection by a TNP-processing company. The waste bins used for this purpose or the storage room for large animals are labelled K1 material.

During necropsy, animal cadavers as well as blood, intestinal contents and possibly considerable quantities of inflammatory and potentially infectious fluids from the large body cavities are produced. Large quantities of aqueous fluids are discharged into the public sewage system via the drains in the dissection room, untreated but highly diluted as a result of the cleaning and disinfection water added. Blood, intestinal contents, animal cadavers and parts are collected in waste bins (240 liters) and then taken to the cadaver room (E019). Larger or partially dismembered animal carcasses are transported to the cadaver room with the aid of the crane.

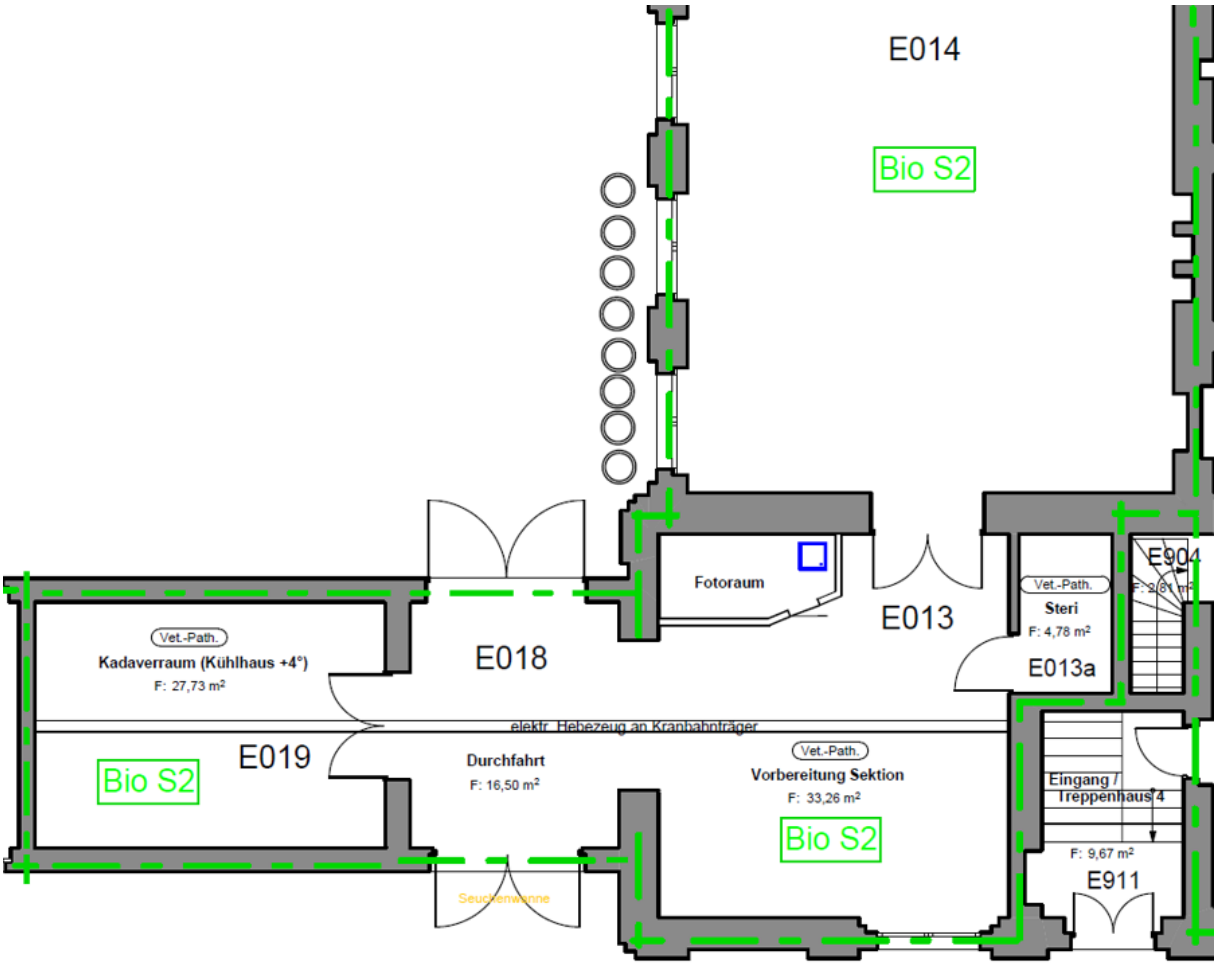


Fig. 6: Floor plan of the necropsy and logistics area with the necropsy room (E014), preparation necropsy/ photo room (E013), sterilization room (E013a), passageway (E018), and the cadaver room (E019)

This room is used for the temporary storage of animals dissected at the institute as well as those brought in from external sources (VMF clinics) for disposal. The disposal of all animal by-products stored in this area is organized by the officially appointed and state-owned animal rendering plant (Zweckverband für Tierkörperbeseitigung Sachsen, Staudaer Weg 1, 01561 Priestewitz/OT Lenz). This usually takes place every Wednesday. For this purpose, the necropsy technicians pre-stack animal carcasses in stainless steel tubs. The containment boundary is then temporarily opened so that the pre-stacked animal carcasses can be picked up in the open air with the gripper arm of the TBA vehicle and then loaded into the vehicle's loading compartment. This is followed by surface decontamination with formic acid as outlined earlier.