



North Valley Animal Disaster Group Standard Operating Guidelines

Title: BIOSECURITY AND SANITATION

Objective: To keep humans and animals safe from the spread of disease

Description:

Biosecurity is a set of procedures intended to protect humans or animals against disease or harmful biological agents. Transmission of microorganisms can occur by:

- Direct contact: Coming into contact with the saliva, blood, urine, mucous, feces, or other body fluids of an infected animal.
- Indirect contact: Coming into contact with areas where animals live or objects/surfaces that have been contaminated including cages/pens, coops, plants, and soil, as well as pet food and water dishes. Inhalation of aerosolized infectious agents could be considered here as well. Fomites are objects that might be contaminated with organisms and can potentially transmit infectious disease. Fomites can include keyboards, clothing, hose, leash, brush, shovel, etc. This means that portable items can be contaminated near one patient and then be a source of transmission to animals (or humans) in other areas of a shelter.
- Vector-borne: Fleas, ticks, flies and mosquitoes are common biological vectors of disease. Heartworm, West Nile, Lyme Disease and Bartonella are some vector transmitted diseases.
- Foodborne/Oral ingestion of pathogen: Eating or drinking something unsafe or that has been contaminated with feces or urine from an infected animal. Contaminated food and water are frequently the cause of oral transmission of disease agents. In people, oral contact with contaminated hands is commonly part of the transmission cycle, which exemplifies the need for excellent hand hygiene among personnel working around animals.

Disrupting the transmission of pathogens from their source (the infected animal or human) to new hosts (animal or human) is the main focus of biosecurity in a shelter. Methods of control include:

- Eliminating sources of pathogens. This involves physically preventing the pathogen from entering the facility or removing it if it enters the facility.
 - Segregation of infected animals is the most important method of reducing potential direct and indirect contact transmission. Not all infected animals show signs of illness, so efforts to decrease the likelihood of animals coming into direct contact are needed.
 - Appropriate handling and segregation of patients with diarrhea helps control the spread of potentially infective organisms in feces. When possible, clinically ill animals should be handled and treated only after all healthy animals have been handled or cared for.
 - The most effective means to prevent transmission of vector-borne pathogens is the elimination or reduction of the insect vector.
- Facility Measures. These are measures designed to remove a hazard at its source or to improve compliance with infection control procedures. This includes:
 - Having a dedicated isolation area
 - Rodent and vector control
 - Food debris and clutter eliminated,
 - Points of entry for rodents sealed and windows screened
 - No standing water outside the shelter area
 - Accessible hand washing options and available disinfectants.
 - Protocols to keep animals or staff separated from a known hazard as well as providing staff with information, training, and supervision for these measures
- PPE (personal protective equipment). These includes the use of special clothing and equipment to protect staff and animals who may become exposed. Examples include nitrile gloves, N-95 respirator masks, and rubber boots.
- Cleaning and disinfecting procedures. Routine cleaning and disinfection are important for environmental control of pathogens
 - Hand hygiene is the single most important factor affecting the risk of transmitting infectious disease agents. Hands should be washed:
 - Before and after handling each animal handling/contact
 - After touching blood, body fluids, secretions, excretions and contaminated items, whether or not gloves are worn
 - Immediately after gloves are removed
 - Between tasks on the same animal to prevent contamination of different body sites
 - After cleaning cages or stalls
 - Before meals, breaks, smoking or leaving work for the day
 - Before and after using the restroom
 - Proper Hand Washing technique can be found in the Training Sheet
 - Cleaning involves the removal of visible organic matter (e.g., feces, urine, food, dirt) with soap or detergent, whereas disinfection involves the application of a chemical to kill the remaining microbes. All multiple use areas where animals

- are examined or treated should be cleaned and disinfected immediately following use by personnel responsible for the animal - irrespective of disease status of the individual animal.
- Cleaning is essential because organic matter increases the environmental survival of many pathogens and decreases the effectiveness of many disinfectants. Equipment and surfaces need to be cleaned with detergent and water to remove adherent organic material before disinfectants are applied. The most important means of controlling transmission by fomites is through proper cleaning and disinfection. Surfaces that are porous (e.g., unsealed wood, concrete, grout) or with poor integrity (e.g., cracks) are difficult to effectively clean and disinfect and should be repaired or replaced.
- Urine, feces, and disposable equipment that has come in contact with an infectious animal (e.g., examination gloves, gowns, bandage materials) should be contained in a leak-proof container or a plastic garbage bag and discarded. These should be double-bagged if materials come from isolation areas. If the inside of a waste container becomes contaminated, the container should be thoroughly cleaned and disinfected after emptying. All waste from an isolation room should be treated as potentially infectious; trash from these areas should be removed by appropriately gloved and gowned personnel. Contaminated articles should be either discarded or taken for additional cleaning and disinfection.
- Used sharps are considered biomedical waste and should be disposed of in approved, puncture-resistant sharps disposal containers to remove, store, and dispose of needles and other items capable of causing punctures in accordance with regulations from municipal and state authorities
- Disinfectants:
 - Disinfectants vary in their toxic and irritation potential for people and animals. Safety Data Sheets should be reviewed by personnel to ensure safe usage
 - Alcohols, povidone iodine, and chlorhexidine solutions are used when contact with skin or other tissues is likely or required. Other disinfecting agents such as bleach, phenols and quaternary ammonium compounds are only applied to equipment or facility surfaces.
 - Disinfectants can only be expected to be effective when applied to clean, non-porous surfaces. Organic material rapidly deactivates most disinfectants. The likelihood that organic material will be present on surfaces should be considered when choosing a disinfectant.
 - Disinfectants vary greatly in their spectrum of activity. Some organisms are very hardy and resistant to disinfection. Charts are available outlining which organisms are killed by various disinfectants (example on last page)
 - Maximal decontamination requires that the solutions be applied at correct dilutions and left on surfaces for adequate amount of contact time-often at least 5-10 min

- It is critical to rinse and remove all residues from previous disinfectant. Some cleaners and bleach will react to produce a noxious gas
- Footbaths - Infectious agents are frequently recovered from floor surfaces but footbaths have severe limitations for necessary contact time and proper use.
- Note on accelerated hydrogen peroxide (oxidizing agents) like Rescue and Prevail
 - Can be used as a cleaner and a disinfectant as it has good activity in some organic debris
 - 1-10 minute contact time
 - Low toxicity, biodegradable, and is not corrosive (unlike other oxidizing agents)
- Laundry Items
 - Single-use, disposable items are ideal for infection control, but their disposal produces tremendous waste and an environmental burden. Thus, laundering an important component of infectious disease control as linens and clothing can serve as fomites. Microbe populations on soiled laundry can be reduced by dilution and further reduced by the mechanical action of washing. Hot air drying also helps eliminate microorganisms. Gloves and dedicated clothing should be worn by those performing laundry duties to reduce contamination with infectious organisms and health risks to staff. Materials with gross contamination should be assessed to determine if they can be effectively cleaned or they should be properly discarded. Otherwise, gross organic material should be removed prior to washing.
 - Because of the risk for clothes to become contaminated during animal care activities, one extra set of clean protective garments should be available at all times.
 - Items from isolation rooms and infected animals should be washed and processed separately from other laundry while wearing appropriate PPE to prevent spread of microbes.

Food and Drink

- Human food/drink should not be consumed or stored where animals are examined, treated, or housed.
- Personnel are also prohibited from eating, drinking, or storing food in areas where biological specimens are handled, or medications are compounded or stored.
- Food should not be left out for extended periods, and should be stored in covered containers
- Storage of food and beverages for personnel is not allowed in any refrigerator or freezer used to store medications, or biological specimens. These refrigerators and freezers should be clearly labeled.

Note about Burn Care: Burn victims present special challenges because they are often immunocompromised and have wounds that require invasive techniques. Burns trigger a cascade of necrotic changes in tissue that are directly related to the cause of the injury and temperature of exposure. Biosecurity here focuses on wound control to limit exposure of patient and the care team to potential resistant pathogens. Cleaning and bandaging of wounds known to be infected with infectious agents of concern (e.g., MRSA or other resistant bacteria) should not be conducted in high traffic areas and should occur in areas that can be easily cleaned and disinfected. Barrier precautions should be used to prevent contamination of hands and attire, and care should be taken to avoid environmental dissemination through drainage of flush solutions or careless handling of bandages.

The Antimicrobial Spectrum of Disinfectants

This table provides general information for selected disinfectant chemical classes. Antimicrobial activity may vary with formulation and concentration. *The use of trade names does not in any way signify endorsement of a particular product. They are provided as examples.*

Removal of organic material must always precede the use of any disinfectant.

	Acids hydrochloric acid, acetic acid, citric acid	Alcohols ethanol, isopropanol	Aldehydes formaldehyde, paraformaldehyde, glutaraldehyde	Alkalis sodium hydroxide, ammonium hydroxide, sodium carbonate	Biguanides chlorhexidine, Nolvasan®, ChlorHex®, Virosan®	Halogens sodium hypochlorite, iodine	Peroxygens accelerated hydrogen peroxide (Rescue®), potassium peroxymonosulfate (Virkon-S®), peroxyacetic acid, (Oxy-Sept® 333)	Phenolic Compounds (Lysol®, Oxy!, Amphyl®, TekTrol®, Pheno-Tek II®)	Quaternary Ammonium Compounds (Roccal®, Zepharin®, Diquat®, Parvosol®, D-256®)
most susceptible									
mycoplasmas	+	++	++	++	++	++	++	++	+
gram-positive bacteria	+	++	++	+	++	+	+	++	++
gram-negative bacteria	+	++	++	+	++	+	+	++	+
pseudomonads	+	++	++	+	+	+	+	++	-
rickettsiae	+	+	+	+	+	+	+	+	+
enveloped viruses	+	+	++	+	+	+	+	+	+
chlamydiae	+	+	+	+	+	+	+	+	-
non-enveloped viruses	-	-	+	+	-	+	+	-	-
fungal spores	+	+	+	+	+	+	+	+	+
picornaviruses (i.e. FMD)	+	N	+	+	N	N	+	N	N
parvoviruses	N	N	+	N	N	+	+	N	-
acid-fast bacteria	-	+	+	+	-	+	+	+	-
bacterial spores	+	-	+	+	-	+	+	+	-
coccidia	-	-	-	+	-	-	-	+	-
prions	-	-	-	-	-	-	-	-	-
most resistant									

LEGEND
 ++ highly effective
 + effective
 + limited activity
 - no activity
 N information not available

a-varies with composition
 b-peracetic acid is sporicidal
 c-ammonium hydroxide
 d-some have activity against coccidia



REFERENCES: Fraise AP, Lambert PA et al. (eds). *Russell, Hugo & Ayilffe's Principles and Practice of Disinfection, Preservation and Sterilization*, 5th ed. 2013. Ames, IA: Wiley-Blackwell; McDonnell GE. *Antisepsis, Disinfection, and Sterilization: Types, Action, and Resistance*. 2007. ASM Press, Washington DC. Rutala WA, Weber DJ, Healthcare Infection Control Practices Advisory Committee (HICPAC). 2008. Guideline for disinfection and sterilization in healthcare facilities. Available at: http://www.cdc.gov/hicpac/Disinfection_Sterilization/toc.html; Quinn PJ, Markey FC et al. (eds). *Veterinary Microbiology and Microbial Disease*. 2nd ed. 2011. West Sussex, UK: Wiley-Blackwell, pp 851-889.

Disinfectant Product Label

Understanding the information on a disinfectant product label is essential for effective microorganism inactivation and removal, as well as ensuring safety when using the product.

This handout overviews key areas of a sample disinfectant label. Always read the product label before use.

Only products with EPA registration numbers should be used. This number indicates the product has been reviewed by the EPA and poses minimal risk to animals, people and the environment when used in accordance with the label.

Products must be used according to label directions. Disinfectants (i.e., antimicrobial pesticides) are regulated under the Federal Insecticide, Fungicide, and Rodenticide (FIFRA) Act.

EPA Reg. No.
1658-XX


COMPANY Y

EPA Est. No.
16XX-MO-1

Product-X

Disinfect-Cleaner-Sanitizer-Fungicide-Mildewstat-Virucide* -
Deodorizer for Hospitals, Institutional and Industrial Use
Effective in hard water up to 400 ppm hardness (calculated as CaCO₃) in the presence of 5% serum contamination

ACTIVE INGREDIENTS:

Octyl decyl dimethyl ammonium chloride.....	1.650%
Dioctyl dimethyl ammonium chloride.....	0.825%
Didecyl dimethyl ammonium chloride.....	2.200%
Alkyl dimethyl benzyl ammonium chloride.....	94.500%
INERT INGREDIENTS.....	100.000%
TOTAL.....	100.000%

KEEP OUT OF REACH OF CHILDREN

DANGER

HAZARD TO HUMANS AND DOMESTIC ANIMALS

PRECAUTIONARY STATEMENTS

CORROSIVE: Causes severe eye and skin damage. Do not get into eyes, on skin, or clothing. Wear goggles or face shield and rubber gloves when handling Product X. Harmful or fatal if swallowed. Wash thoroughly with soap and water after handling.

ENVIRONMENTAL HAZARDS: This product is toxic to fish. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. For guidance contact your State Water Board or Regional Office of the EPA.

PHYSICAL AND CHEMICAL HAZARDS: Do not use or store near heat or open flame.

STATEMENT OF PRACTICAL TREATMENT: In case of contact, immediately flush eyes or skin with plenty of water for at least 20 minutes. For eyes, call a physician. Remove and wash contaminated clothing before reuse. If ingested call a physician immediately.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

Manufactured by Y Chemical Company, Sometown, Sometown 60345

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

DIRECTIONS FOR USE

Product X is a germicide, soapless cleaner and deodorant which is effective in water up to 400 ppm hardness in the presence of organic soil (5% serum). When used as directed, will not harm tile, terrazzo, resilient flooring, concrete, painted or varnished wood, glass or metals.

FOR USE IN VETERINARY CLINICS, ANIMAL CARE FACILITIES, LIVESTOCK FACILITIES AND ANIMAL QUARANTINE AREAS

Apply Product X to walls, floors and other hard (inanimate) non-porous surfaces with a cloth, mop or mechanical spray device so as to thoroughly wet surfaces. Prepare a fresh solution daily or when use solution becomes visibly dirty.

DISINFECTION - To disinfect hard surfaces, use 1 fluid ounce of Product X per gallon of water. Apply by immersion, flushing solution over treated surfaces with a mop, sponge or cloth to thoroughly wet surfaces. Allow treated surfaces to remain moist for at least 15 minutes before wiping or rinsing. Product X will disinfect hard, non-porous surfaces in veterinary clinics, animal care facilities, livestock facilities and animal quarantine areas.

For heavily soiled areas, a preliminary cleaning is required.

2 oz. gallon use-level. The activity of Product X has been evaluated in the presence of 5% serum and 400 ppm hard water by the AOAC use dilution test and found to be effective against a broad spectrum of gram negative and gram positive organisms as represented by:

<i>Pseudomonas aeruginosa</i>	<i>Enterobacter aerogenes</i>
<i>Staphylococcus aureus</i>	<i>Streptococcus faecalis</i>
<i>Salmonella choleraesuis</i>	<i>Shigella dysenteriae</i>
<i>Escherichia coli</i>	<i>Brevibacterium ammoniagenes</i>
<i>Streptococcus pyogenes</i>	<i>Salmonella typhi</i>
<i>Klebsiella pneumoniae</i>	<i>Serratia marcescens</i>

Boot bath: Use 1.5 fluid ounces per gallon in boot baths. Change solution daily and anytime it becomes visibly soiled. Use a bristle brush to clean soil from boots before disinfecting with Product X.

Disinfecting trucks and farm vehicles: Clean and rinse vehicles and disinfect with 1 fluid ounce per gallon of Product X. If desired, rinse after 12 minutes contact or leave unrinsed. Do not use Product X on vaccination equipment, needles, or diluent bottles as the residual germicide may render the vaccines ineffective.

Sanitizing non-food contact surfaces (such as floors, walls, tables, etc): A 1 ounce per 2 oz. gallon use-level, Product X is an effective sanitizer against *Staphylococcus aureus* and *Klebsiella pneumoniae* on hard porous and non-porous environmental surfaces. Treated surfaces must remain wet for 60 seconds.

This section will describe the hazards related to humans and animals when using this product. It recommends personal protective gear that should be worn, what effects it will have on the environment and treatment information should it be splashed into the eyes or ingested.

Some products may have multiple uses (i.e., cleaning versus disinfection) and require different dilutions and contact times for such actions.

This section describes what disease organism the product works against and under what conditions it was tested.

This section describes what dilutions should be used for different applications. Specialty applications (e.g., boot baths) will also be listed.