



Standards for Sanitation: What, Why and How?



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The upside of sanitation: what's the goal?

“Good sanitation is an integral part of humane animal housing. Proper cleaning and disinfection practices help reduce the transmission of infectious diseases to both animals and people, and result in a cleaner and healthier environment. A clean shelter also has the added benefits of increasing the comfort level of the animals and presenting a positive image of the shelter to the public.”



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The danger of sanitation: what's the worst thing that could happen?



- Waste time, money and chemicals with process that fails to work
- Spread disease to animals and/or staff
- Cause toxicity to animals and workers



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Worst case scenarios



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Avoiding the downside

- “Sanitation protocols must be based on current knowledge and recommendations developed specifically for animal shelters”
 - Seriously durable germs common in shelters
 - Calicivirus, parvovirus, panleukopenia, ringworm
 - Extraordinarily vulnerable population
 - Unvaccinated, juveniles, poor nutrition, co-infections
 - Sometimes high turnover staff/workers/volunteers
 - Need a process that is effective, safe, and practical



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The importance of protocols

“Protocols must be developed and documented in sufficient detail to achieve and maintain the standards described in this document, and updated as needed to ensure that they reflect current information and pertinent legislation.”



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Fun with protocols

- What **areas and objects** to sanitize
- What **products to use** for cleaning and disinfection (and degreasing and deodorizing)
- What **process to use** for application
 - Removal of solids
 - Dilution of chemicals
 - Application method
 - Contact time
 - Drying



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Resources for protocol development

- Maddie's Infection Control Manual
- Infectious Disease Management in Animal Shelters, Chapter 4 (Miller and Hurley, Wiley-Blackwell, 2009)
- www.sheltermedicine.com



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What needs sanitizing?

http://sheltermedicine.com/sites/default/files/uploads/documents/objects_areas_to_sanitized.pdf



Make your own list?



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What products will you use?

http://sheltermedicine.com/sites/default/files/uploads/documents/Disinfectant_table_2011.pdf

“Sanitation protocols must include specific methods and agents for achieving the goals of both cleaning and disinfection”

- “Products that have not been independently validated against unenveloped viruses (i.e. parvovirus, panleukopenia, calicivirus) and other pathogens of concern (i.e. ringworm) should **not** be used as the sole disinfectant”



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Cleaners

What is a Cleaner?

n. 1. a person, device, chemical agent, etc., that removes dirt, as from clothes or carpets.



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Cleaners

What is a cleaner?

- Detergents
- Degreasers



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What is a cleaner?

Detergents are used to remove any remaining organic material (i.e. blood, feces, urine, sneeze droplets) prior to the application of a disinfectant



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What is a degreaser?

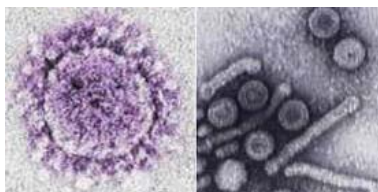
Degreasers are more powerful detergents specially formulated to penetrate layers of dried on body oils and other greasy debris. They are used periodically to remove build up that can render disinfectants ineffective



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What is a Disinfectant?

n. 1. An agent, such as heat, radiation, or a chemical, that disinfects by destroying, neutralizing, or inhibiting the growth of disease-carrying microorganisms.



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Which of the following disinfectants has reliable efficacy against feline calicivirus?



Use the buttons on the right side of the screen to answer.



Click for A

Click for B



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Some commonly used disinfectants

- Quaternary Ammonium compounds (Broadcide®, Parvosol®)
- Bleaches (Sodium Hypochlorite, Wysiwash®, BruClean®)
- Accelerated hydrogen peroxides (Accel TB®)
- Oxidizing Agents (Trifectant®, Virkon®)



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Which products are both cleaners *and* disinfectants?

- Quaternary Ammonium compounds
- Accelerated Hydrogen peroxides
- Potassium peroxymonosulfate



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Which products kill un-enveloped viruses?

- Some oxidizing Agents
 - Trifectant
 - Virkon
- Bleaches
 - Sodium hypochlorite (household bleach)
 - Calcium hypochlorite (Wysi-Wash®)
 - Sodium dichloroisocyanurate (Bruclean®)
- Accelerated Hydrogen peroxides
 - Accel TB®



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Variable efficacy of disinfectants

TABLE. Chemical compounds used for disinfection, effectiveness of chemical disinfectants and selected products against certain organisms, and selected properties of chemical disinfectants that should be considered when used for cleaning and disinfection

Chemical compounds	Chlorine* 0.01%–5%	Iodine iodophor 0.5%–5%	Chlorhexidine 0.05%–0.5%	Alcohol† 70%	Oxidizing agents 0.2%–3%	Phenol 0.2%–3%	Quaternary ammonium 0.1%–2%
Selected products	Clorox®	Tincture/ Provodine	Nolvasan®	Rubbing alcohol	Virkon-S®	pHisoHex®	Roccal-D®
Effectiveness of chemical disinfectants against certain organisms[§]							
Bactericidal	Good	Good	Good	Good	Good	Good	Good
Bacterial spores	Good†	Poor	Poor	Poor†	Fair to good	Poor	Poor
Virucidal	Good	Good	Poor	Fair	Good	Poor**	Poor
Envelope viruses	Yes	Yes	Limited	Yes	Yes	Limited	Limited
Nonenvelope viruses	Yes	Limited	No	No	Yes	No	No
Fungicidal	Good	Fair	Fair to good	Good	Fair	Fair	Fair
Protozoal parasites	Fair (concentrated)	Poor	Poor	Poor	Poor	Poor	(ammonia)
Properties of chemical disinfectants^{††}							
Effectiveness							
In organic matter	Poor	Poor	Fair	Poor	Poor	Good	Poor
Inactivated by soap	No	Yes	No	No	No	No	Yes
Effective in hard water	Yes	No	Yes	Yes	Yes	Yes	No
Residual activity	Poor	Poor	Good	Fair	Poor	Poor	Fair

Source: Adapted from the Nebraska Cooperative Extension and the U.S. Department of Agriculture, 2003.

* Bleach should be mixed fresh daily and replaced whenever contaminated with organic matter (1:32 dilution of 5.75% solution provides >1,500 ppm chlorine).

† Rubbing alcohol is flammable.

§ Effectiveness as a bactericidal, virucidal, or fungicidal agent and effectiveness in eliminating bacterial spores and protozoal parasites: good = effective; fair = moderate effect; and poor = inferior effect. Effectiveness in eliminating envelope and nonenvelope viruses: yes = effective; limited = moderate effect; and no = not effective.

† Alcohol synergistically potentiates the sporicidal effect of hypochlorites (chlorine). Mix 5.75% solution of hypochlorite 1:1 with 50% ethyl alcohol/water. Mix fresh at the time of use and provide contact time of ≥30 minutes.

** The effectiveness of 2-phenylphenol (ortho-phenylphenol) is fair.

†† Effectiveness in organic matter: good = effective; fair = moderate effect; and poor = inferior effect. Inactivated by soap and effective in hard water: yes = chemical compound has this property; no = chemical compound does not have this property. Residual activity: good = chemical compound has residual activity; fair = moderate residual activity; and poor = inferior residual activity.



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Order of cleaning

“Cleaning should be performed in order of animal susceptibility to disease and potential risk to the general population, starting with the most susceptible animals and ending with those who carry the highest risk of transmitting infectious disease”:

- Healthy adoptable puppies/kittens
- Healthy adoptable adults
- Stray healthy puppies/kittens
- Stray healthy adults
- Quarantine rooms
- Isolation rooms



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Protective clothing

“Protective clothing (gown, gloves, and/or boots) should be worn in each area and removed before proceeding to other areas of the facility”



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Goes without saying?

“When water or cleaning and disinfecting products will be sprayed in or near the area of the primary enclosure, animals must be removed from the cage or kennel, or separated from the area being cleaned by guillotine doors to prevent splatter, soaking of the animals, and stress.”



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*“It is an **unacceptable** practice to spray down kennels or cages while animals are inside them”*



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Application

Mopping...

- Should be avoided if possible!
- Harbors odors and spreads disease

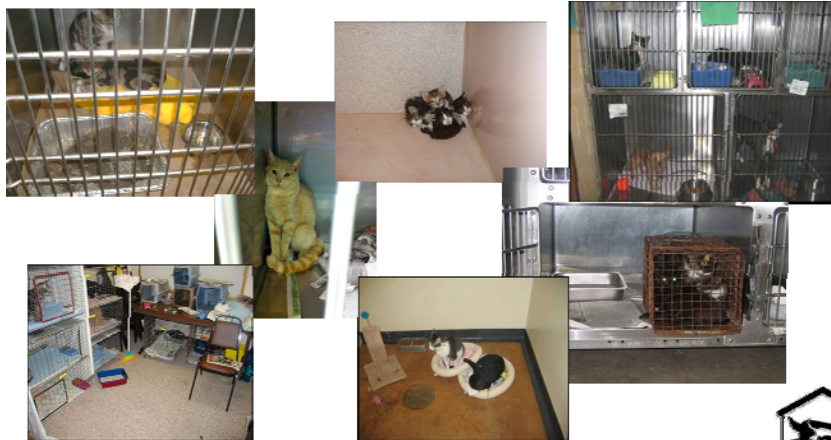
If you must...

- Use a disinfectant with good activity in the presence of organic material
- DO NOT use contaminated mop water from one housing area to another; never use plain water
- Use designated cleaning supplies for each area of the facility



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Quiz Question: Single most important source of shelter cat disease? (answer in chat)



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Spot Cleaning

- “In many instances, cages and kennels can be cleaned using the “spot cleaning” method, where the animal remains in its cage while the cage is tidied, and soiled materials, urine, and feces are removed”
- “Spot cleaning may be less stressful for the animal as it requires less animal handling and does not remove familiar scents from the enclosure.”



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Spot cleaning details

- Change gloves between cats
- Confine cat to one side, hold gently with gloved hand, or place in carrier within cage
- Tidy cage, freshen water, replace food and litter
- Use water, detergent, paper towel or single use rag to wipe visible debris
- Leave bedding unless heavily soiled
- Open and close cage doors quietly



Search "spot clean" on sheltermedicine.com



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Staffing to get it done

- "Enough staff must be assigned to complete sanitation tasks promptly each day so that animals spend the majority of their time in sanitary conditions."



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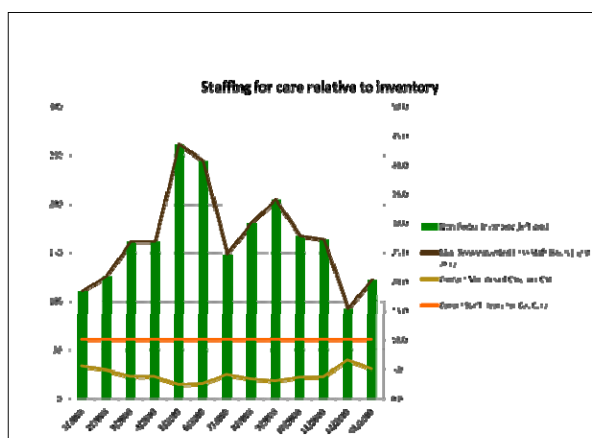
Staffing needs

- Observe how long it takes to *correctly* clean each cage type
 - Including associated processes such as observing animal health, flagging problems, feeding and watering, completing laundry
 - Count at least ten instances and average
- Multiply that by number of cages or animals housed at maximum capacity: that's how much time you need
- Count how many staff minutes you have for cleaning per day: that's how much time you have
- Do these numbers match?



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Trouble!



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If the numbers don't add up:

- More efficient cleaning protocol e.g. spot cleaning for cats?
- Better chemical, shorter contact time (combined cleaner/disinfectant, e.g. accelerated hydrogen peroxide)?
- More efficient housing that's quicker to clean (e.g. double compartment housing)?
- Restructure staffing so more people are on during cleaning time?
- Identify tasks that volunteers or non-skilled labor can help with?
- Reduce daily population by reducing intake or time in shelter?



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Speaking of housing...

“Improper housing and poor facility design can also contribute to pathogen transmission. Housing for recently admitted or ill animals and those who are younger than 20 weeks of age should be designed to permit cleaning without extensive handling of the animal or removal to an area that has not been sanitized (e.g., double-sided or compartmentalized housing).”



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Housing problem



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Argh!



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“Move down one”

- Imperfect solution for an imperfect world
- One run/cage empty at end of line
- Move-able numbers (ear tags, clip boards)
- Clean, disinfect and dry end run, move animal and number
 - Use fast acting disinfectant e.g. potassium peroxymonosulfate, accelerated hydrogen peroxide
- Caution not to splash adjacent runs
 - Install full barriers between runs
 - Applicators or foam-ers rather than spray
- Repeat as necessary



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“Move down one”



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Low cost barriers

After researching many 'made for kennel' solutions that we could never afford and being very discouraged, one sleepless night I thought of **roofing panels**..... Turns out that roofing panels used to be made of tin, then fiberglass... well now they're made of **inexpensive PVC** – and make excellent and very **affordable kennel barriers!!!** ...They are not just very affordable, but also very easy to work with – they can be cut to size with tin snips, and all we did to attach them was drill a pair of small holes in about 5 places and attached them with a zip cable tie!! They are not perfect in that they do not create a water-tight barrier at the bottom, but they do **stop 100% of the nose-to-nose contact and fecal contamination across kennels**. They are incredibly easy to clean and impervious to disinfectants.



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Low cost barriers

- Place between kennels to limit splashing
- Horizontal seam if multiple panels needed
- Seal seams with silicone
- ~ \$20 for ~ 2' by 8' panel



For example, at <http://www.homedepot.com/webapp/wcs/stores/servlet/Search?keyword=palruf&langId=-1&storeId=10051&catalogId=10053>



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Are you a fomite?

- A fomite is an object that may be contaminated with pathogens and contribute to transmission of disease. The human body and clothing may serve as fomites.



<http://www.youtube.com/watch?v=JYf9od63bTo>



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Keeping fomites under control

“Any complete sanitation protocol must address proper hygiene of shelter staff, volunteers, and visitors, including signage, supervision, and hand sanitation.”

Hygiène des mains Hôpitaux Universitaires de Genève VigGermé



http://www.youtube.com/watch?v=0at_itzJCDM



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Which was most effective at reducing bacterial count on vet student's hands?



A: Hand washing



B: Hand sanitizer

Click for AClick for B

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Hand hygiene

- Hand sanitizers
 - 60-80% ethanol or isopropyl
 - Emollients to protect skin
 - Adequate contact time
 - Within 3 feet of point of care
- Handwashing
 - After contamination with feces, blood, body fluids etc.
 - After inadvertent exposure to durable organisms
 - Thorough drying
- Gloves when it counts
 - Planned exposure to durable organisms, feces, blood, etc.
 - Wash hands after removal



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Footbaths

- “Footbaths are inadequate to prevent infectious disease spread and should not be relied on for this purpose”
- Most disinfectants used in footbaths are inactivated by organic material and sunlight
- When it counts, use dedicated boots or shoe covers



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Watering devices

“Automatic watering devices and water bottles should not be used if they cannot be disinfected before being used by another animal”



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Outdoor areas

“Outdoor areas around the shelter must be kept clean, recognizing it is impossible to disinfect gravel, dirt, and grass surfaces”



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Managing outdoor areas

“Access to areas that cannot be disinfected should be restricted to animals who appear healthy, have been appropriately vaccinated and dewormed, and are 5 months or older”



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Making sure it happens

Adequate training is required to ensure humane animal care, as well as staff and public safety (ILAR 1996). This includes allocating time and resources for employees and volunteers to complete training prior to undertaking responsibility for tasks.



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Training tools

- ASPCApro: [Sanitation smarts](#)
- UC Davis: [Virtual Shelter Consultant](#) and of course www.sheltermedicine.com
- Maddie's/IowaCFSPH [Animal Shelter Infection Control Tool](#)
- The Wonders of Youtube: <http://www.youtube.com/watch?v=-j02-7KuKeU>
- PetSmart Charities Webinars (*Not quite up to date at the moment*)



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Thanks for all you do!



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