DISINFECTANTS

Product vs. Process

By: ProVetLogic Professional

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Disinfectants Versus Organic Matter

Fact: *Disinfectants do not have the inherent chemical ability to effectively breakdown organic matter*.

Disinfectant advertising and literature will often claim efficacy for use in veterinary hospital facilities. The common inference is, if a product can be used in these areas, it will surely be effective in the kennel or barn environment. Veterinary hospital environments are usually constructed of linoleum, stainless steel, glass and plastics; these are not the types of surfaces commonly found in a kennel or barn. Many disinfectants may be useful in disinfecting hospital surfaces but, on their own, offer minimal effectiveness in a heavy soil environment such as a kennel or barn.

- **Laboratory Versus Life Environment:** Although disinfectant efficacy can be qualified in an *approved laboratory, it is difficult to ensure product performance and full efficacy in a heavy soil environment.

- **Recurring Illness:** There are period theories as to why certain diseases flare up every few months at the same facility. Many of the recurring illnesses are gastrointestinal in nature. Some facilities have implemented the **"Disinfectant Rotation"** method, falling back on the notion that using the same disinfectant over an extended period will create **"Super Bugs"**. The real culprit is **"Biofilm".**

- **Biofilm (THE HOST):** Over time and even with the best attention to removing urine and fecal deposits, a biofilm will develop on surfaces and especially on more porous surfaces such as concrete, ceramic tile, grout, wood and stone. As the biofilm builds, the disinfectant begins to have difficulty penetrating the surface. As the biofilm is penetrated with water pressure and/or through agitation, the bacteria can be released making it more accessible to other animals in close proximity.

- **The pH Effect:** As a virus cell mutates, a higher or lower than neutral pH is needed to effectively breakthrough the cell structure. This will only take place if the disinfectant's active ingredient can penetrate the biofilm to reach the cell. Degrading the organic biofilm will improve the disinfectant's ability to kill it's intended infectious agent.

- **Odor Control & Drain Maintenance:** Even the most well maintained and managed facilities experience odors and issues with poor flowing drains. The odor, which is often more of a stale smell than a new odor, is a result of organic matter creeping into and building up in cracks, crevices, behind baseboards, underneath structures and in drains. Disinfectants and bleach do not have the inherent chemical ability to seek out and degrade disease and odor causing organic matter.

The Recommended Solution:

We recommend adding **ProVetLogic Kennel Care Floor Cleaner & Drain Maintainer** or **STABLE Environment (barns & stables)** to your daily and/or regular cleaning protocol. The active ingredients in these formulas, which are **Global Harmonization System (GHS)** compliant, will seek out and degrade odor and disease-causing organic matter. Safe and nontoxic, these formulas can be used to clean and deodorize both indoor and outdoor surfaces.

*The Environment Protection Agency (E.P.A.) is the only agency that can approve the efficacy of disinfectants that make specific infectious agent kill claims. Under Federal Law, only those infectious agent kill claims approved by the E.P.A. can be listed on a disinfectant's label, advertising and/or marketing material.

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BLEACH

No Longer the Universal Disinfectant

Background

For many years bleach, or sodium hypochlorite, has been used as an inexpensive universal disinfectant. Over the last several years, the E.P.A. has put pressure on bleach manufactures, including the large national brands, to discontinue promoting bleach as an antimicrobial unless the product has been tested and properly registered for efficacy. Here are a few commonly asked questions about bleach:

How is bleach made?

The raw materials used for making **bleach** are chlorine, caustic soda, and water. Chlorine and caustic soda are **produced** by putting electricity through a sodium chloride salt solution.

Is bleach safe for the environment?

Once mixed with water, **bleach** reacts with other chemicals to form biproducts, such as dioxins. **Bleach** is especially damaging to the **environment** because it lingers for many years. Even small amounts of **toxic** chemical can accumulate in air and water over time, which can eventually result in adverse health effects.

Is bleach a stable chemical?

Commercial bleach can be very unstable in that the active ingredient (sodium hypochlorite) will dissipate over time. The manufacturer may use as much as **10%** active ingredient to water but, by the time the product reaches the consumer, the actual active may reduce to as low as **4%**. So, there is no way to accurately determine the solutions efficacy!

Is bleach a disinfectant?

The E.P.A. (Environmental Protection Agency) requires that any product, including bleach, that makes specific claims for either human or animal efficacy be thoroughly **tested**, **registered** and **properly labeled**. Every batch, of an E.P.A. approved disinfectant, must meet stringent testing and approval before it can be packaged and sold to the consumer.

Is bleach a good cleaner?

Bleach isn't made with a surfactant (detergent), which is needed to clean and remove biofilm. So, a **second solution** and **step** will be required before applying the bleach solution.

Can bleach be hazardous to use?

Yes! In addition to being a known **carcinogen**, bleach can also irritate skin and permanently **damage eyes**. Bleach can have a negative impact on an animal's **olfactory sense** and should not be used around working dog breeds. Cats are especially sensitive to bleach and can suffer from **upper respiratory distress** when bleach is used to clean in the cattery environment.

Bleach is extremely aggressive to many surface materials including metal, vinyl, upholstery and fabrics.

Is it safe to store bleach near food?

No! Bleach will naturally expand in its container. So, to prevent the container from expanding, the manufacturer will use a vented cap to allow the gas to escape into the air. The gas, in a confined environment, does have the capability of **permeating surrounding surfaces**, such as cardboard and paper thus creating a potential for the contamination of food products.

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The Significance of pH in Cleaning Solutions

Background:

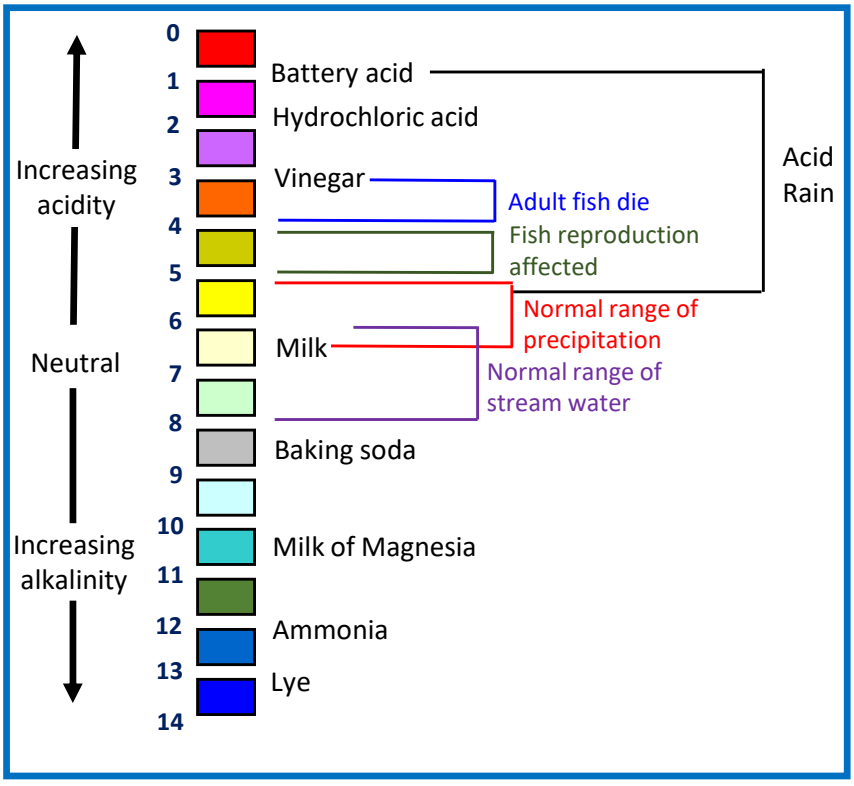
pH plays a significant role in cleaning. The pH scale goes from 0 (very strong acid) to 14 (very strong alkaline or basic) with 7 being neutral. The scale is logarithmic, meaning that a chemical with a pH of 8 is 10 times the alkalinity of a chemical with a 7 pH. A pH of 5 would indicate an acidity that is 100 times more acid than a pH of 7, and so on. 0 pH and 14 pH are 10,000,000 times stronger than 7, which means such products are very corrosive and caustic. **It is important to use extreme caution not to mix such products. A catastrophic reaction may occur, resulting in injury and damage to surfaces.**

Generally speaking, the further away from pH of 7, the more powerful the cleaner, which means that both highly alkaline and highly acidic products can be dangerous and potentially explosive if used incorrectly.

The limiting factor is the type of soil and the surface being cleaned. Most organic soils are slightly acidic (6.9 -5.0). So when cleaning in an animal care environment, where the level of organic matter is higher, we recommend using a cleaner with a higher than neutral pH (8.0 - 11.0).

Many cleaning chemistries use acids or bases of various types and in varying strengths as the base of their formula. Some substrates are sensitive to attack by bases and acids. Aluminum, for example is readily and rapidly attacked by alkaline materials. Acids, on the other hand, attack many metals including steel.

pH Scale:



Cleaner pH:

Type of cleaner	pH range
Mineral-acid cleaner	0-2
Mild acid	2-5.5
Neutral	5.5-8.5
Mild alkaline	8.5-11
Alkaline	11.5-12.5
Highly alkaline	12.5-14

Summary:

When selecting a cleaner/disinfectant for use in an animal care environment it is important to consider the pH of the product. Mineral-acid cleaners (pH 0-2) and Highly alkaline cleaners (pH 12.5-14) that attack metal and other substrates, can potentially cause burns to the skin of pets and workers.

Contact an industry professional, with knowledge of cleaning chemistries, to find the right product for your specific facility and protocol requirements.

Cleaning Chemical Safety

Background:

Workplaces, such as veterinary hospitals, commercial kennels, animal shelters, grooming establishments and other animal care facilities use cleaning chemicals to ensure the health of the animals and cleanliness of their buildings. Some cleaning chemicals can be hazardous, causing problems ranging from skin rashes and burns to upper respiratory illness. The following provides information and practices to help keep pets and workers safe when working with cleaning chemicals.

Potential Health Problems Caused by Cleaning Chemicals:

Many factors influence whether a cleaning chemical will cause health problems, including:

1. Chemical ingredients of the cleaning product.
2. How the cleaning product is being used and stored.
3. Ventilation in the areas where the cleaning product is used.
4. Whether there is a chance for splashes and spills.
5. Whether a cleaning product comes in contact with the skin.
6. Whether mists, vapers and/or gases are released.

Choosing the Right Cleaning Chemical for the Job:

Cleaners, sanitizers and disinfectants serve different purposes, and it is important to choose the least hazardous cleaning chemical that will accomplish the task at hand. Before purchasing a cleaning product, determine whether or not sanitizing or disinfecting is necessary. **For example:** If the main objective of the cleaning protocol is odor control or the surface is extremely porous, such as with synthetic pet turf, gravel, etc. then choosing a disinfectant for the task may not be the most effective choice. Disinfectants don't have the inherent chemical ability to breakdown heavy organic matter and especially on porous surfaces, so an enzymatic based detergent may be the best alternative.

If sanitizing or disinfecting is necessary, be sure that the product purchased is effective for the microorganisms being targeted. The **EPA (Environmental Protection Agency) regulates all sanitizers and disinfectants** (termed "antimicrobial pesticides).

Many building managers are purchasing **"Green"** cleaning chemicals with the expectation that green cleaning products are safer for workers and the environment. However, placing the word **"Green"** in a name or on a bottle does not ensure that the chemical is safe. Always review the label and safety documentation for the products you purchase, including green cleaning products, to understand their health and safety hazards.

Safe Work Practices when using Cleaning Chemicals:

Mixing cleaning products that contain bleach and ammonia can cause severe lung damage or death!

OSHA regulations require that employers provide safe working conditions for employees using cleaning chemicals. Safe work practices when using cleaning chemicals include the following:

1. Warning workers not to mix cleaning chemicals and especially those that contain bleach and ammonia.
2. Making sure that workers know which cleaning chemicals require dilution and how to correctly dilute the cleaners they are using.
3. Reviewing the proper protective equipment needed, such as gloves and goggles.
4. Ensuring that all cleaning product containers, including spray bottles, are labeled to identify their contents and hazards.
5. Ensuring good ventilation to allow sufficient air flow to prevent the buildup of potentially hazardous vapors.
6. Providing workers with a place to wash up after using cleaning chemicals.

Mixing Chemicals: Not only could toxic gases be released, mixing chemicals together will greatly reduce or eliminate the individual product's efficacy. **For example:** Mixing a disinfectant (termed "antimicrobial") with any product and especially one that is enzyme based (termed "promicrobial") will neutralize the effectiveness of both products.

The Top 10 Most Asked Questions

We've put together a list of and have provided answers to the top 10 most frequently asked questions regarding the use of disinfectants in the animal care environment.

Question 1	**Is there such thing as, "A Green Disinfectant"?**
Answer	No. All disinfectants manufactured in the USA are classified as pesticides and are hazardous to aquatic life.
Question 2	**Who says, "Your product kills parvo"?**
Answer	All disinfectants, whether manufactured for use in the human or animal health environment, must be tested and approved by the EPA, using the AOAC method of testing.
Question 3	**Should I preclean the surface before disinfecting?**
Answer	Disinfectants don't have the inherent chemical ability to degrade organic matter. A second solution should be used on surfaces, such a kennel floors, where there is a higher amount of organic soil.
Question 4	**Do I need to rinse the surface after using a disinfectant?**
Answer	The need to rinse the disinfectant will depend on several factors, including; a) required per manufacturers label instructions b) a visible residue is left on the surface c) the presence of puddles or heavy residue
Question 5	**Can I use bleach or disinfectant on my grass or artificial pet turf?**
Answer	Disinfecting extremely porous surfaces, such as synthetic or natural grass, is difficult, because disinfectants need to bond to the surface to be completely effective.
Question 6	**How effective are disinfectants in killing infectious agents, such as Canine Parvovirus?**
Answer	Even though a disinfectant may meet the EPA test standards for efficacy against viruses, such as Canine Parvovirus, some disinfectants may require a preclean solution to ensure that the biofilm is effectively removed.
Question 7	**Do disinfectants kill parasites, such as Coccidia and Giardia?**
Answer	No! The best way to minimize the impact of parasites is to eliminate as much of the organic host as possible. Parasites require a host to survive for an extended period.
Question 8	**What is the best way to deal with the outbreak of Kennel Cough?**
Answer	Kennel Cough can be a generic term for several organisms or viruses that can cause a dog to develop the symptoms of Kennel Cough but remain undefined. Disinfectants and/or bleach, which exacerbate the symptoms of Kennel Cough, have minimal impact on airborne transmitted diseases. We recommend the I.V.C (Isolate, Ventilate, & Clean) Protocol. Please contact ProVetLogic for more information.
Question 9	**Can I disinfect pet dishes?**
Answer	Unless a product is specifically labeled with instructions for sanitizing pet food and water dishes, we do not recommend using the product. Disinfectants, unlike foodservice sanitizers, can have a high amount of detergent, which can leave behind a toxic residue on the surface.
Question 10	**Can I apply a disinfectant directly to an animal's skin?**
Answer	No! Disinfectants can be toxic, if absorbed through the skin.

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