

General Guidance for Cleaning and Disinfection of Rabbit Hemorrhagic Disease Virus (RHDV) Contaminated Premises

July 2020

(This document provides general guidance and is not to supersede requirements from the State Animal Health Official (SAHO))

Environmental Persistence of Rabbit Hemorrhagic Disease Calicivirus

- Rabbit Hemorrhagic Disease Virus (RHDV) is a calicivirus which is spread by transmission via the oral, nasal, or conjunctival route; RHDVa and RHDV2 are viral subtypes.
- Most research on viral shedding, environmental persistence, and transmission was conducted with RHDVa but RHDV2 is assumed to have similar characteristics.
- The virus is present in urine, feces, and respiratory secretions from infected rabbits, thus contaminated bedding can be a source of infection.
- Contaminated foods might be a source of infection, and insects, birds, and scavengers may transmit the virus as vectors.
- The virus can survive for long periods outside the host. For example:
 - Virus may survive up to 3 months on cloth at room temperature, and also in infected tissue (carcasses) under field conditions.
- Environmental temperature and protection by organic material are important factors in the survival of the virus.



Photo by Canva.com

Disinfectants

- RHDV is inactivated by several chemicals, including sodium hypochlorite (household bleach), 1% potassium peroxymonosulfate (e.g. Virkon™ S), and accelerated hydrogen peroxide products (e.g. Rescue™). Chemicals other than what are listed here may also be effective for disinfection against RHDV. A full list of products effective against emerging pathogens such as feline calicivirus (a research surrogate for RHDV) is available on the [EPA website](#).

Practical Cleaning and Disinfection Guidelines for Animal Health Settings

NOTE: These guidelines do not necessarily list all commercially available disinfectant products within each category. Always follow disinfectant label instructions for proper use and safety, and never mix different types of disinfectants together. Disinfectant guidelines included below are for hard, non-porous surfaces.

Pre-Cleaning (Dry Cleaning)

- Because of the hardy nature of the virus, removal of all organic material (bedding, feces, fur, material on hutches or cages etc.) via scraping, brushing, sweeping or digging before cleaning and disinfection is critical for cleaning and disinfection to be effective.



- Remove all visible debris from items to be disinfected (cages, hutches, feeding equipment, waterers, etc.).
- Remove all bedding from cages, hutches, or ground and safely discard by deep burial or double bagging in plastic bags, disinfecting the outer bag by spraying with disinfectant solution, and disposing of in a licensed landfill or as otherwise directed by your SAHO. Items made of wood are best burned, safely discarded either by deep burial, or by double bagging in plastic bags, disinfecting the outer bag by spraying with disinfectant solution, and disposing of in a licensed landfill or as otherwise directed by your SAHO.
- For wood that cannot be discarded, remove organic material and then clean and disinfect as instructed below.
- Rabbit feces should be removed and safely discarded by deep burial or double bagging in plastic bags, disinfecting the outer bag by spraying with the disinfectant solution and disposing of in a licensed landfill or as otherwise directed by your SAHO.
- Soil beneath rabbit hutches that has been contaminated with rabbit urine, feces, or bedding should be removed to a depth beyond visible contamination and buried.
- Any feed that has the possibility of being contaminated should be safely discarded by deep burial or double bagging in plastic bags, disinfecting the outer bag by spraying with disinfectant solution, and disposing of in a licensed landfill or as otherwise directed by your SAHO.
- Then, submerge or saturate items or structures and spray with the proper dilution of one of the disinfectants as described below. Allow the appropriate contact time for the disinfectant used (5 minutes for diluted bleach and Rescue™ or 10 minutes for 1% Virkon™ S). Contact time means leaving the item saturated with disinfectant for the specified time. The disinfectant solution should be reapplied as needed to keep the surface wet during the entire contact time. After appropriate contact time has been achieved, rinse with potable water and let dry before further contact if using household bleach. If using Virkon™ S allow surfaces to air dry, but rinse waterers and feeders with potable water before use. If using Rescue™ wipe the surfaces and let air dry. Always follow disinfectant label instructions for proper use and safety.

Further Virus Elimination

- After cleaning, disinfection and drying of all hutches, water, feed containers, other rabbit equipment or materials is completed, a fallow period during which no rabbits are introduced is recommended. The fallow period timeframe will be specified by the SAHO.
- In situations where C&D is complicated by the conditions (such as large amounts of organic material, wooden structures, a large number of infected animals, etc), a minimum of a 90 day fallow period is recommended.

Preparation of Disinfectants: Household Bleach

- A diluted solution of sodium hypochlorite (household bleach) is a disinfectant readily available to rabbit owners. To prepare the minimum required dilution as specified on the label, add ½ cup of 6% or 8.25% household bleach to one gallon of potable water. Alternatively, a 10% bleach solution may be used by mixing 1 part 6% or 8.25% household bleach with 9 parts potable water. Contact time needed is 5 minutes, then rinse with cold

Cleaning and Disinfection (C&D):

- Once organic material has been removed by dry cleaning, wash items or structures thoroughly with soap and potable water; rinse well with potable water and let dry.

water and allow to air dry. Wear nitrile, silicon or rubber gloves and eye protection and work in a well ventilated area when mixing and handling the bleach or bleach solution. Wear protective clothing to avoid contact with the skin. Bleach concentrates lose potency over time.

- Be sure to store bleach concentrates in a cool, dark, place and use recently purchased bleach concentrates to mix solution to be used for disinfecting purposes. New dilute bleach solutions should be mixed every 24 hours to maintain effectiveness.
- [Click here](#) for information on what to do if you have accidental exposure.

Potassium Peroxymonosulfates, e.g. Virkon™

- A 1% solution is effective for disinfection for RHDV2. To achieve a 1% use dilution, add Virkon™S (depending on formulation type) mix 1 sachet or 1 Virkon™ S scoop (1.3 ounces of powder), or 8 tablets, in 1 gallon of water. Stir thoroughly until fully dissolved, then use per label. Contact time needed is 10 minutes. Allow to air dry but rinse waterers and feeders with potable water before use.
- Wear protective gloves and eye/face protection. Use only in a well-ventilated area. Avoid breathing dust. Wash hands thoroughly after handling. Wear protective clothing to avoid contact with skin. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials and food and drink.

- Dispose of contents and container in accordance with all local, regional, national and international regulations.
- [Click here](#) for information on what to do if you have accidental exposure.

Accelerated Hydrogen Peroxides, e.g. Rescue™

- Rescue™ (companion animals): For the concentrate, dilute 8 ounces per 1 gallon water, or 2 ounces per 1 quart (32 ounces) water to achieve a 1:16 dilution. Apply until surface is wet and allow 5 minutes contact time, then wipe surfaces and let air dry. Contact time recommended is for non-porous surfaces. A ready to use spray formula is also available, as is a farm animal product (concentrate) by the same company called Intervention™.
- Wear nitrile, silicon or rubber gloves and eye protection, general ventilation is adequate.

Follow all label instructions for use and safety:

- <https://www.viroxfarmanimal.com/resources/reference-sheets>
- <https://rescuedisinfectants.com/product-info/>
- [Click here](#) for information on what to do if you have accidental exposure.



References

- Spickler, A.R. Rabbit Hemorrhagic Disease. 2003 (last updated June 2020). At <http://cfsph.iastate.edu/DiseaseInfo/factsheets.php>
- World Organisation for Animal Health Technical Disease Card. Rabbit haemorrhagic disease. Last updated Feb 2009. At https://www.oie.int/fileadmin/Home/eng/Animal_Health_in_the_World/docs/pdf/Disease_cards/RHD.pdf
- Eleraky, N.Z., Potgieter, L., N.D., Kennedy, M.A. Virucidal efficacy of four new disinfectants. 2002. J Am Anim Hosp Assoc 38(3): 231-4.
- Sanekata, T., et al. Evaluation of the antiviral activity of chlorine dioxide and sodium hypochlorite against feline calicivirus, human influenza virus, measles virus, canine distemper virus, human herpesvirus, human adenovirus, canine adenovirus and canine parvovirus. 2010. Biocontrol Sci 15: 45-49.
- Solomon, E.B. et al. Comparative susceptibilities of hepatitis A virus, feline calicivirus, bacteriophage MS2 and bacteriophage ΦX-174 to inactivation by quaternary ammonium and oxidative disinfectants. 2009. Int J Antimicrob Agents 33: 287-294.
- Clorox Bleach Master Labels - Clorox Bleach 6% 5813-114 https://www3.epa.gov/pesticides/chem_se_arch/ppls/005813-00114-20181030.pdf Clorox 8.25% sodium hypochlorite, EPA reg. no. 5813-100 https://www3.epa.gov/pesticides/chem_se_arch/ppls/005813-00100-20171208.pdf
- Virkon S Master Label - Virkon S EPA reg. no. 39967-137 https://www3.epa.gov/pesticides/chem_se_arch/ppls/039967-00137-20191011.pdf
- Rescue™ Concentrate Master Label – EPA reg. no. 74559-4 https://www3.epa.gov/pesticides/chem_search/ppls/074559-00004-20180517.pdf

The USDA is an equal opportunity employer, provider, and lender.

**Mention of companies or commercial products does not imply recommendation or endorsement by the USDA over others not mentioned. USDA neither guarantees nor warrants the standard of any product mentioned. Product names are mentioned solely to report factually on available data and to provide specific information.*