2025 HPAI Guidelines: Cleaning and Disinfection

Effective cleaning and disinfection only happen when the correct:

1. Product
2. Concentration
3. Method
4. Contact time, and
5. Storage are used.

Cleaning and Disinfection Procedures

Cleaning

The primary goal of cleaning is to remove organic matter and impurities from surfaces and objects. This is typically done using soap or detergents. Some products, such as Sterigene, function as both a detergent and a disinfectant.

Cleaning is an essential first step and must be completed before any disinfection process begins.

Disinfection

Disinfection aims to kill or significantly reduce the number of remaining microorganisms. Disinfectants are most effective when used on surfaces that have already been cleaned of organic material.

There are various types of disinfectants, each designed to target specific microorganisms. Selecting the appropriate product is essential and should be based on the organism of concern. In this context, the focus is on eliminating Highly Pathogenic Avian Influenza (HPAI).

All facilities must keep up-to-date Safety Data Sheets (SDS) for every chemical used, along with Standard Operating Procedures (SOPs) to ensure consistency, safety, and effectiveness (refer to the example SOP provided in this document).

Always follow the instructions on the label. These ensure you use the product according to the process which has been tested and proven to work for the conditions/purpose described.

Check the expiry date on the bottle to ensure the product is still active.

The following page includes a chart of commonly used products available in New Zealand that are suitable for use in wildlife facilities and are effective against HPAI.

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Product name (and active ingredient)	Concentration (of product)	Directions to dilute to the correct concentration for disinfection (product label instructions)	Contact time	Product information on efficacy against virus/bacterial etc	SDS link
Safe4 (Halogenated 3º amine)	10%	1 part safe4 + 9 warm or cold water Concentration = 1:10	30 minutes	https://safe4all.co.nz/why-safe4/ Dilution Guide https://safe4all.co.nz/wp-content/uploads/2024/02/Dilution-Guide-New_516649.pdf	https://safe4all.co.nz/wp-content/uploads/2021/01/Safe4-Disinfectant-Cleaner-Concentrate-SDS-V5.0.pdf
SteriGene (Halogenated 3º amine)	1%	50mls SteriGene per 5 litres of water or 5mls SteriGene per 500mls water Concentration = 1:100	Equipment soak 20 minutes, fabrics soaked 10minutes or use 50ml SteriGene per 4kg load of washing	Efficacy AND Dilution Guide: https://www.orageneglobal.com/sterigene-disinfectant/	https://www.orageneglobal.com/wp-content/uploads/2023/04/Oragene-STERIGENE-Green-RTU-SDS-Rev.9-19.02.20-NZ.pdf
Virkon S (Oxidising agent)	1%	1 tablet per 500 mL of water OR 10 g of powder per litre of water for a 1% solution. Warm or cold water	10 minutes For clothing use a 3.5% solution	Efficacy https://www3.epa.gov/pesticides/chem_search/ppls/039967-00137-20220308.pdf	https://horticentre.co.nz/wp-content/uploads/Safety%20Datasheets/Virkon-S%20SDS.pdf
Bleach (with 5-6% sodium hypochlorite)	10%	1 part bleach + 9 parts water. Cold water only For clothing: 35mls bleach made up to 1 litre with cold water	10 minutes	Efficacy and Dilution guide: https://www.ncbi.nlm.nih.gov/books/NBK214356/	https://www.cityfm.com.au/wp-content/uploads/2024/03/Cyclone-Premium-Bleach-SDS.pdf
Prevail (Hydrogen peroxide)	7%	1:40 Dilution. Mix 25mls Prevail per litre cold water	5 minutes	Dilution guide: https://anissentials.co.nz/prevail-concentrate-dilution-rates/ Efficacy https://anissentials.co.nz/faqs/	https://www.ncbi.nlm.nih.gov/books/NBK214356/

F10 SC (4º ammonium)	0.2% 0.4%	Mix 2ml in 1 litre of water for 0.2% Or 4ml in 1 litre of water for 0.4%	10 minutes contact time for 0.2% Or 5 minutes for 0.4%	Efficacy: https://www.meadowsah.com/f10-efficacy-tests2 Dilution guide: https://www.f10products.co.uk/wp-content/uploads/dlm_uploads/2018/08/Vet-Guide-Equine-practice-28-March-2017-final2.pdf	https://www.dechra.co.nz/wp-content/uploads/2022/04/f10sc-disinfectant-nzl-20211013.pdf
Ethanol	60-90%		15 seconds	https://www.medicalnewstoday.com/articles/ethanol-hand-sanitizer#How-effective-is-it?	https://www.ecplabchem.co.nz/function/file/73F17C18C68D444FA365B96E9F13DB28
Isopropyl alcohol	60-90%		15 seconds		https://irs-api.nzsafetyblackwoods.co.nz/api/files/get-file?path=MRO-Engineering%2FGeneral%2C%20Fast%2C%20Lube%2FIsopropyl%20Alcohol%201L%20ALE0130%2C%20ALG0130.pdf

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Common terminology

Word/term	Definition
Antimicrobial	A substance capable of killing micro-organisms.
Bactericide	A chemical agent which, under defined conditions, is capable of killing bacteria but not necessarily bacterial spores.
Biocide	A generalised term for a chemical agent capable of killing or inactivating micro-organisms. It embraces the more specific terms algicide, bactericide, fungicide, sporicide and virucide Note. Pesticides are not considered to be biocides.
Detergent	Detergents are powerful cleansers that can break up dirt, oils, and grease in clothing or on dishes.
Disinfectant	A chemical agent which under defined conditions is capable of disinfection.
Disinfection	The destruction of micro-organisms, it does not necessarily kill all micro-organisms, but reduces them to a level acceptable for a defined purpose, for example, a level which is harmful neither to health nor to the quality of perishable goods.
Fungicide	A chemical agent which under defined conditions is capable of killing fungi including their spores.
Hygiene	the practice or principles of keeping yourself and your environment clean to maintain health and prevent disease:
Sterile	Free from all living micro-organisms.
MSDS or SDS	MSDS (Material Safety Data Sheet) and SDS (Safety Data Sheet) are documents that provide detailed information about the hazards of a substance, including its chemical properties, potential health effects, and safe handling procedures. While often used interchangeably, SDS is the newer, globally standardized format based on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), replacing MSDS in most regions
Micro Organism	Microorganisms are very tiny one-celled organisms, viruses, fungi, and bacteria, and are found everywhere in the world. They are found in all living things, plants and animal. Microorganisms can live in the air, on land, and in fresh or salt water environments. Some of them, pathogens, can be harmful and causes diseases, but there are some microorganisms that are needed for living things to survive.
Pathogen	An organism that causes disease. Can be animals, plants or micro-organisms.
Spore	A highly resistant structure formed from somatic cells in several genera of bacteria. E.g. Bacillus. Also, a reproductive structure formed by fungi.
Sporicide	A chemical agent which, under defined conditions, is capable of killing bacterial spores.
Virucide	A chemical agent which, under defined conditions, is capable of killing or inactivating viruses.
Virus	A non-cellular entity consisting of protein and nucleic acid. Can only replicate after entry into specific types of living cell.

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Recommended Reading

- A comprehensive glossary: https://www.skychemicals.co.uk/glossary-of-terms
- Understanding the SDS/MSDS: https://www.chemscape.com/resources/the-difference-between-msds-sds#:~:text=MSDS%20(Material%20Safety%20Data%20Sheet,2000s%20and%20has%20continued%20worldwide.
- Comprehensive chemical list effective against HPAI https://www.epa.gov/pesticide-registration/epas-registered-antimicrobial-products-effective-against-avian-influenza

EXAMPLE Standard Operating Procedure: Cage cleaning

Purpose:

To ensure all cages are cleaned following the same method as part of the facility's mission to mitigate disease transmission between patients and maintain a high standard of hygiene.

Scope:

1. Removing cage furniture
2. Cleaning the cage
3. Disinfecting the cage

Operating Procedure

1. Removing cage furniture

Begin by removing food/water bowls, any browse or perching material, enrichment and bedding. Using a paper towel remove any further organic material from the cage.

Wash the food and water bowls/laundry/reusable perching as per the respective SOP's.

2. Cleaning the cage

Fill the red bucket with 1L water and 1 pump (~1ml) of detergent. Using the soft scrub brush, scrub all 6 surfaces of the cage, ensuring to scrub each bar on the front of the cage. Rinse off with water.

3. Disinfecting the cage

Fill the spray bottle with 500ml of water and 5ml of Sterigene (1:100 dilution), gently swirl to ensure the Sterigene is mixed through the water. Spray all surfaces of the cage with the solution, ensuring they are thoroughly wet. Wait a minimum of 30 seconds before rinsing and drying the cage..

The cage is now ready to be set up for the next patient.